December 3, 1956

What Track Forces Are Like Today . . . p. 44

RAILWAY AGE

THE INDUSTRY'S WEEKLY NEWSMAGAZINE

Why 7 out of 10 roller bearing freight cars roll on TIMKEN® tapered roller bearings

THE big switch to "Roller Freight" is on! More and more railroads are putting freight cars on roller bearings—to eliminate the hot box problem and to cut maintenance and operating costs to a bare minimum. And seven out of ten roller bearing cars are rolling on *Timken*® bearings. The reason for this tremendous preference is that Timken *tapered* roller bearings are the only bearings that *deliver* what you expect to get from roller bearings.

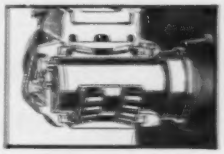
Here's why. The taper prevents lateral movement within the bearing. There's no pumping of lubricant through the seal and out of the journal box—saving lubricant and reducing diesel locomotive wheel slippage. There's no scuffing of rollers and races to cause wear and shorten bearing life. Timken bearings *roll* the load. They never slide it. No metal-to-metal sliding friction.

And because of the taper, roller ends are held snug against the rib, where wide area contact keeps rollers properly aligned. *Positive* roller alignment is *assured*. There's no skewing of rollers to upset full line contact.

Timken bearings slash bearing inspection and lubrication costs. They cut terminal bearing inspection time 90%, reduce lubricant costs as much as 95%.

When all railroads go "Roller Freight" they'll save an estimated $224 million—earn about a 22% return on the investment. And the additional investment needed to equip freight cars with roller bearings is less than ever! The cost of "crutch" devices used in an attempt to keep friction bearings going has narrowed the price gap between roller bearings and friction bearings.

Add 'em up, and you'll see why 54 railroads and private car owners have already gone "Roller Freight". Why 7 out of 10 roller bearing freight cars roll on Timken bearings. Why more railroads are going "Roller Freight"! The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable address: "TIMROSCO".



TIMKEN

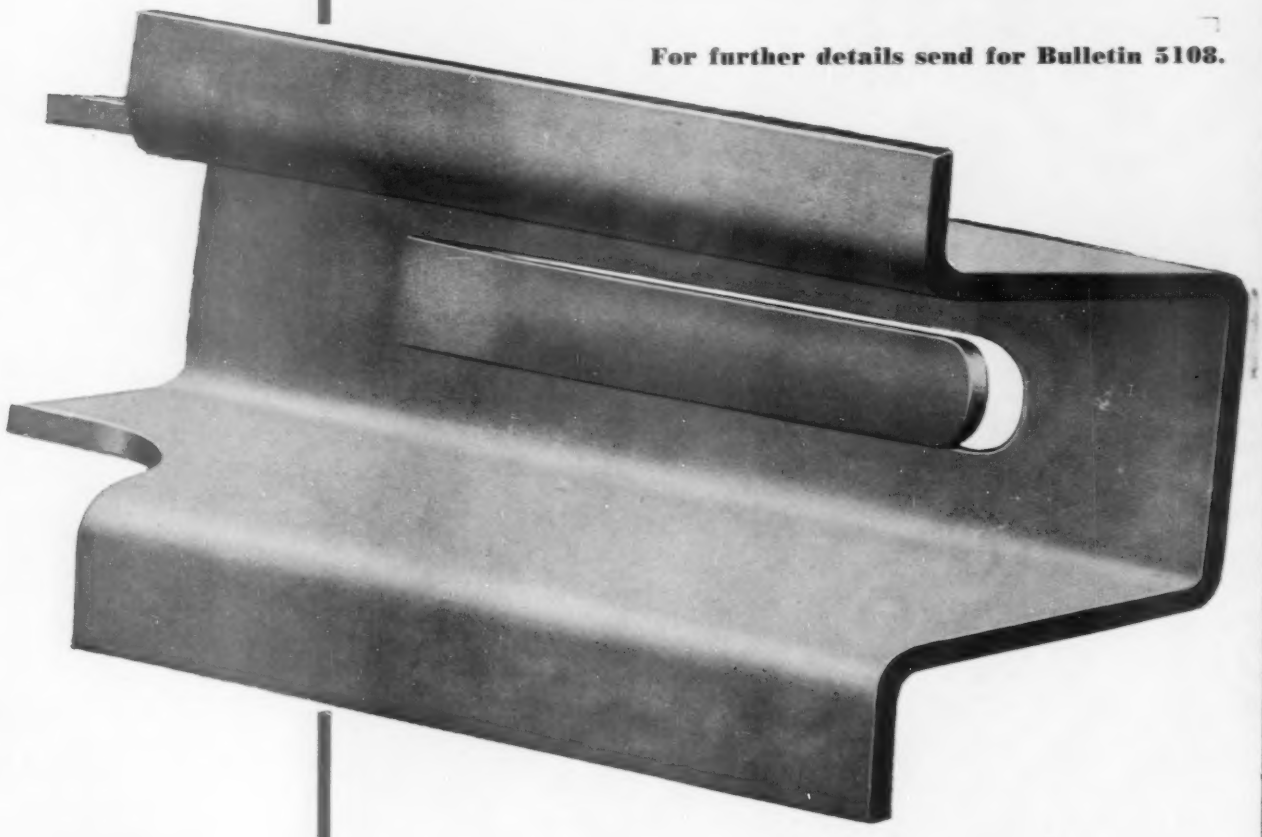
TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS ROLL THE LOAD

busiest little man at UNIT TRUCK

The busiest little man at Unit Truck these days is our V-P in charge of handling orders for Unit's new Self-Centering Wear Plates. It would appear that a lot of our customers agree with us that a really workable self-centering wear plate is all that Unit needs to make it the SUPER-PERFECT truck—and this is it! S-C Wear Plates keep brake beams centered at all times—cut down tremendously on brake shoe and wheel flange wear.

For further details send for Bulletin 5108.



UNIT TRUCK CORPORATION NEW YORK

Keeping Rock Under Control On the Central of Georgia

To minimize the possibility of rock slides, the Central of Georgia Railway Company is installing Bethlehem Rock Anchor Bolts at potential danger points. A typical installation, shown above, is in a cut at Oak Mountain Tunnel, near Leeds, Alabama. It consists of 1-in.-diam wedge-type slotted bolts, in lengths of 6 ft and 8 ft, plus 6 in. x 6 in. flat anchor plate washers.

Bethlehem Rock Anchor Bolts are ideal for keeping rock under control because of the effective way in which they bolt the rock formation. Bethlehem Rock Anchor Bolts lock individual boulders to bedrock, or bolt the layers of rock to each other, so effectively that they do not slide or fall.

SLOTTED AND HEADED ANCHOR BOLTS

Bethlehem Rock Anchor Bolts are made in two types: a 1-in.-diam slotted bolt, used with a steel wedge, and a $\frac{3}{4}$-in.-diam headed bolt, used with an expansion shell. Each type can be counted on to provide positive locking action in the hole.

If you would like to consider a rock-bolting program, or if you have any question about how to install anchor bolts, we'll be pleased to have a representative call at your convenience. Just drop a line to the nearest Bethlehem office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation.

BETHLEHEM STEEL

BETHLEHEM STEEL

KANSAS CITY SOUTHERN

Speeds repairs, cuts costs in this yard!

Trackmobile moving box car onto transfer table...

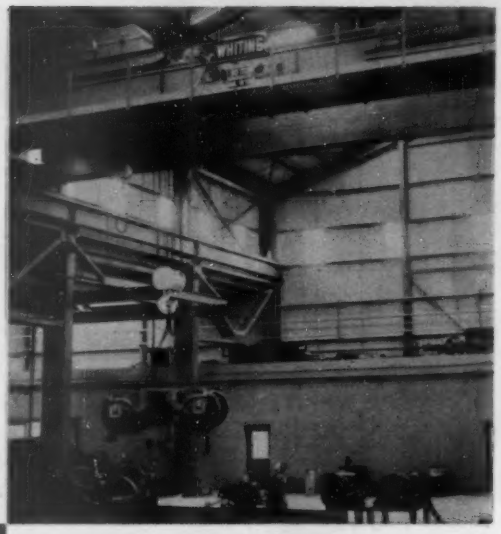
The new Deramus Yard of the Kansas City Southern Railway is as up-to-date as modern equipment can make it. Efficient shop layout speeds repairs of Diesels and cars . . . returns them to the road with a minimum of down-time. Many vital functions are performed by Whiting equipment such as...

WHITING TRANSFER TABLE—with 35-ton capacity and 60-foot span. It is located at one end of the car repair shop to move cars from the yard's five storage tracks to any desired shop track.

WHITING 2TMA TRACKMOBILE—moves bad order cars to transfer table and repaired cars out of the shop. Trackmobile gets around in the yard fast by changing from rubber-tired road wheels to steel rail wheels in less than a minute.

WHITING 30-TON, 60-FOOT SPAN TRAVELING OVERHEAD ELECTRIC CRANE—speeds handling of heavy parts in the Diesel repair shop. It has a 5-ton auxiliary hoist for lighter loads. (See Photo)

WHITING 30-TON, 120-FOOT SPAN OVERHEAD TRAVELING ELECTRIC CRANE—set-up to service all five tracks in the car repair shop. Has enough "muscle" to lift whole cars . . . and a 5-ton auxiliary hoist for faster handling of lighter loads.



Write to
WHITING CORPORATION
15603 Lathrop Avenue Harvey, Illinois

WHITING
TRANSPORTATION EQUIPMENT

READ THE DETAILED STORY OF THE DERAMUS YARD
The "cover story" of the WHITING LIMITED'S spring issue tells all about this new $8½ million yard. Write for your copy.

ALSO YOURS FOR THE ASKING!
TRACKMOBILE Bulletin T-115—Features and advantages that cut car handling cost. Illustrated with many photos.
WHITING CRANE Bulletin No. 80—complete information on the 14 outstanding Whiting Crane features.

RAILWAY AGE

EDITORIAL AND EXECUTIVE OFFICES at 30 CHURCH STREET, NEW YORK 7, N. Y., AND 79 WEST MONROE STREET, CHICAGO 3, ILL.

EDITOR ..... James G. Lyne
EDITOR EMERITUS ..... Samuel O. Dunn
EXECUTIVE EDITOR ..... Joe W. Kizzia
MANAGING EDITOR ..... C. B. Tavenner
NEWS & FINANCIAL EDITOR .. Fred C. Miles
WASHINGTON EDITOR ..... Walter J. Taft

TRAFFIC & TRANSPORTATION
Joe W. Kizzia — Gardner C. Hudson
Thomas H. Desnoyers

MECHANICAL ..... H. C. Wilcox
F. N. Houser, Jr. — James F. Berge
Norman E. Gillespie

ELECTRICAL ..... Alfred G. Oehler

ENGINEERING ..... M. H. Dick
R. E. Dove — R. M. Schmidl

SIGNALING & COMMUNICATIONS
John H. Dunn — Robert W. McKnight

REGIONAL NEWS
New York ..... Robert B. Keane

PRESENTATION ..... Franklin Ryan

LIBRARIAN ..... Edith C. Stone

EDITORIAL ASSISTANTS
Ann Ortlinghaus — June Meyer — Wanda Brown

DIRECTOR OF PRODUCTION
M. J. Figa, Jr., *New York*

DIRECTOR OF RESEARCH
John W. Milliken, *New York*

ART DIRECTOR
Russell F. Rypsam, *New York*

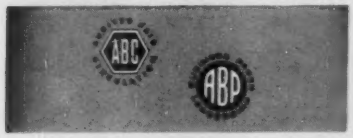
PUBLISHER
Robert G. Lewis, *New York*

SALES PROMOTION DIRECTOR
Fred Lesner, *New York*

ADVERTISING SALES DEPARTMENT

New York 7, N.Y., 30 Church St., WO-4-3060	C. W. Merriken J. S. Vreeland P. Baker
Chicago 3, Ill., 79 W. Monroe St., RA-6-0794	J. R. Thompson J. W. Crossett J. D. Dolan W. J. Gatenby
Cleveland 13, O. Terminal Tower, MA-1-4455	H. H. Melville C. J. Fisher J. C. Lyddy
Atlanta 9, Ga., 22 Eighth St., N.E.	J. S. Crane
Dallas 19, Tex., 3908 Lemmon Ave., Lakeside 2322	Joseph Sanders
Los Angeles 17, Cal., 1151 W. Sixth St., MA 6-0553	Fred Klaner, Jr. B. J. Erickson
Portland 5, Ore., 1220 S.W. Morrison, CA-7-4993	L. B. Conaway
San Francisco 4, Cal., 244 California St., GA-1-7004	Lewis Vogler
London E.C. 1, 103 Newgate St.	Sibley-Field Publishing Co., Ltd.
Frankfurt am Main (16), West Germany, Wittelsbacher Allee 60	International Advertising Agency

Published weekly with an additional issue in September by the Simmons-Boardman Publishing Corporation at Orange, Conn., and entered as second class matter at Orange, Conn. James G. Lyne, president. Arthur J. McGinnis, executive vice-president and treasurer. F. A. Clark, vice-president and secretary.



SUBSCRIPTION TO RAILROAD EMPLOYEES ONLY IN U. S., U. S. POSSESSIONS, CANADA AND MEXICO, $4 ONE YEAR, $6 TWO YEARS, PAYABLE IN ADVANCE AND POSTAGE PAID. TO RAILROAD EMPLOYEES ELSEWHERE IN THE WESTERN HEMISPHERE, $10 A YEAR; IN OTHER COUNTRIES, $15 A YEAR—TWO-YEAR SUBSCRIPTIONS DOUBLE ONE-YEAR RATE. SINGLE COPIES 50c, EXCEPT SPECIAL ISSUES. CONCERNING SUBSCRIPTIONS WRITE R. C. VAN NESS, CIRCULATION DIRECTOR, 30 CHURCH ST., NEW YORK 7.

Workbook of the Railways

Vol. 141, No. 24
December 3, 1956

CONTENTS and

Week at a Glance

Agricultural trucking exemptions . . .

. . . should be subjected to thorough Congressional review, according to a representative cross-section of industrial traffic men. . . . p.7

A 22% freight-rate increase . . .

. . . is what eastern railroads are seeking, says David I. Mackie, chairman of the Eastern Railroad Presidents' Conference, and that position is closely paralleled by western railroads. . . . p.8

FORUM: Progress comes hard . . .

. . . in those areas of railroading that involve the whole industry—and there are more such inter-company activities in railroading than in any other industry. Railroads have shown how fast they can act in fields where each company can function on its own. What can be done to get equally effective action in meeting inter-company problems? . . . p.37

Plywood gets nod on special jobs . . .

. . . on both freight and passenger equipment. In some applications it has some disadvantages, but many railroads are satisfied that they have overcome them. Result: more uses and more users. . . . p.38

Radio speeds up small yard . . .

. . . where yardmasters and foremen no longer have the traditional time-losing difficulty of keeping in touch with everything and everybody affecting performance. . . . p.41

What's happening to railroad track forces? . . .

. . . The old-time section gang is changing, even disappearing altogether, as the pressure of high wage rates and the capabilities of new machines impel adoption of new track-maintenance techniques. . . . p.44

BRIEFS

Signaling facilities for helicopters . . .

. . . are now under study by the Civil Aeronautics Adminis-

They snap-on—and stay on—

WABCO® Dated Packing Cups

"Quick" and "Easy" are the words for WABCO Packing Cups. At the regular cleaning time, you snap them off, clean them and snap them on again. It is not unusual for these cups to provide satisfactory service for two or more cleaning periods under normal wearing conditions. Their high resiliency assures continuous cylinder wall contact with minimum leakage.

When you replace brake cylinder packing cups, seals and gaskets, be sure to specify the original brand, WABCO, and you'll get the same long service, time after time. The date of manufacture, mold number and piece number are molded into every part.

Westinghouse Air Brake
COMPANY
AIR BRAKE DIVISION WILMERDING, PENNA.

Current Statistics

Operating revenues, nine months	
1956	$7,829,083,355
1955	7,466,749,844
Operating expenses, nine months	
1956	$6,032,499,606
1955	5,619,486,124
Taxes nine months	
1956	$831,812,299
1955	820,788,381
Net railway operating income, nine months	
1956	$773,057,071
1955	836,306,002
Net income, estimated, nine months	
1956	$607,000,000
1955	658,000,000
Average price 20 railroad stocks	
November 27, 1956	95.43
November 29, 1955	99.96
Carloadings revenue freight	
Forty-six weeks, 1956	33,798,555
Forty-six weeks, 1955	33,571,754
Average daily freight car surplus	
Wk. ended Nov. 24, 1956	6,769
Wk. ended Nov. 26, 1955	5,174
Average daily freight car shortage	
Wk. ended Nov. 24, 1956	3,613
Wk. ended Nov. 26, 1955	10,751
Freight cars on order	
November 1, 1956	122,250
November 1, 1955	61,964
Freight cars delivered	
Ten months, 1956	53,563
Ten months, 1955	29,673
Average number railroad employees	
Mid-October 1956	1,041,456
Mid-October 1955	1,086,858

RAILWAY AGE IS A MEMBER OF ASSOCIATED BUSINESS PUBLICATIONS (A.B.P.) AND AUDIT BUREAU OF CIRCULATION (A. B. C.) AND IS INDEXED BY THE INDUSTRIAL ARTS INDEX, THE ENGINEERING INDEX SERVICE AND THE PUBLIC AFFAIRS INFORMATION SERVICE. RAILWAY AGE, ESTABLISHED IN 1856, INCORPORATES THE RAILWAY REVIEW, THE RAILROAD GAZETTE, AND THE RAILWAY AGE GAZETTE. NAME REGISTERED IN U. S. PATENT OFFICE AND TRADE MARK OFFICE IN CANADA.

Departments

Financial	64
Forum	37
Freight Car Loadings	9
New Equipment	9
Questions and Answers	16
People in the News	70
Railroading After Hours	47
Railway Market	9
Railway Officers	70
Supply Trade	64
Technical Tidings	13
What's News in Products	35

Week at a Glance CONTINUED

tration. It is anticipating inter-city helicopter operations and wants to be sure the government provides the latest in navigational aids. CAA's acting administrator, James T. Pyle, has predicted that multi-engine helicopters would "provide a new operational freedom while maintaining even higher safety standards than are possible today."

New rail laid in replacement . . .

. . . last year cost an average of $108.21 per long ton, the highest price on record. It was about 4% above 1954's $103.87 and more than 150% above 1941's $43.26. The 1955 tonnage total, 841,681, was lowest of the past 15 years. It compared with 1954's 873,626 tons, and 1953's 1,132,837.

Net working capital fell one-third . . .

. . . during the 12 months ended August 31, the drop having been from $904,892,000 to $607,508,000. The figures, covering Class I line-haul railroads, represent amounts by which current assets, less materials and supplies, exceeded current liabilities.

A new passenger-train cost formula . . .

. . . has been prepared by members of the ICC's staff for use in the commission's No. 31954 investigation of the deficit from passenger service. The formula has been submitted to railroads and other interested parties on a "proposed" basis for criticism and suggestions. These must be in writing and are due December 17.

A 'Pageant of Transportation' tour . . .

. . . throughout continental Europe has been announced for the summer of 1957 by Swissair Lines, New York. The four-weeks' study and pleasure trip will visit several cities and traffic centers to survey the latest developments in European transportation. Swissair says the tour will be of special interest to railroad personnel in all branches.

Volume of intercity general freight . . .

. . . transported by truck during September was down 6.6% from the volume hauled in September 1955, and 6.5% below that hauled in August 1956, says the Research Department of the American Trucking Associations. However, it added, tonnage hauled during the first nine months of 1956 was up 4.3% over the same 1955 period.

to Stop weeds...

Borate weed killers are proving best for 'roads from every standpoint...*efficiency, safety, economy, conveniency, easy application.*

Pacific Coast Borax Company pioneered the use of borates for maximum control of vegetation. Continued research has developed a group of borate herbicides which are now effectively meeting every phase of Railroad weed control. Today most 'roads are using our weed killers, in preference to all others, for the year-'round maintenance of weed-free conditions about trestles, tie piles, yards, signals, switches and along the rights-of-way.

You will want to know how these herbicides can benefit you; a note to the office nearest you will bring full information. Better yet, ask for a personal discussion about your weed problems, with no obligation. Our sales force, technically trained, is well qualified to give you the most practical solution.

United States Borax & Chemical Corporation

PACIFIC COAST BORAX COMPANY DIVISION

MANUFACTURERS OF FAMOUS "20 MULE TEAM" PACKAGE PRODUCTS ®

Weed Killers: BORASCU · Concentrated BORASCU · POLYBOR-CHLORATE · UREABOR · MONOBOR-CHLORATE

ALABAMA
First National Bank Building
AUBURN

CALIFORNIA
630 Shatto Place
LOS ANGELES

260 California Street
SAN FRANCISCO

530 West Willow
STOCKTON

CANADA
304 Hawthorne Drive
CALGARY, ALBERTA

COLORADO
2221 Oswego Street
DENVER

ILLINOIS
3456 Peterson Avenue
CHICAGO

LOUISIANA
504 Delta Building
NEW ORLEANS

MINNESOTA
253 Plymouth Building
MINNEAPOLIS

MISSOURI
4010 Washington Street
KANSAS CITY

NEBRASKA
916 WOW Building
OMAHA

NEW YORK
P. O. Box 7257
ALBANY

100 Park Avenue
NEW YORK

OHIO
5012 Euclid Ave., Room 2006
CLEVELAND

OKLAHOMA
P.O. Box 7598
OKLAHOMA CITY

OREGON
1504 N. W. Johnson Street
PORTLAND

PENNSYLVANIA
302 Wilford Building
PHILADELPHIA

TEXAS
1503 Hadley Street
HOUSTON

3302 Avenue A (P.O. Box 1464)
LUBBOCK

WASHINGTON
2519 Sixth Avenue
SEATTLE

RAILWAY AGE
Workbook of the Railways

Shippers Would Curb Exempt Trucks

Charge Supreme Court goes beyond intent of Congress—What goes for frozen chicken should go for a can of beans, they say

If a frozen chicken can be moved legally under the agricultural exemptions of interstate commerce law, then why not a can of pork and beans? Processing the canned item is not significantly different from freezing poultry before shipping it to market.

That's the attitude of a wide sampling of industrial traffic men polled by Railway Freight Traffic, monthly companion publication of Railway Age. The substance of their response to the RFT poll was that Congress should review the whole area of agricultural trucking exemptions and specifically define and clarify their intent.

The issue of whether a chicken is more justifiably exempted from regulation after processing than is a batch of beans was implicitly raised by the Supreme Court in one of its most recent decisions on the matter (Railway Age, Apr. 30, p. 8).

"A chicken that has been killed and dressed," the majority of the high court held in its 5-4 decision, "is still a chicken. Removal of its feathers and entrails has made it ready for market. But we cannot conclude that this processing which merely makes the chicken marketable turns it into a 'manufactured commodity'.

"At some point processing and manufacturing will merge. But where the commodity retains a continuing substantial identity through the processing stage we cannot say that it has been 'manufactured' within the meaning" of the pertinent section of the Interstate Commerce Act.

Shipper reaction to such analysis is indicated by this comment from J. F. Forral, traffic manager, Cudahy Brothers, Cudahy, Wis.:

"If dressed poultry is exempt from regulation, then why not dressed hogs, lambs, calves or cattle? Certainly the function of manufacture is basically the same."

R. A. Ellison, transportation manager, Cincinnati Chamber of Commerce, comments that Congress should "spell out just what products" it wants exempted. He says "any processing in the nature of manufacture should place such products outside the exemption."

F. L. Partridge, executive secretary, Burlington (Iowa) Shippers' Association, see canned beans in precisely the same category as frozen chicken.

Many shippers view agricultural exemptions as the outgrowth of an attempt by Congress to provide help to the farmer, and protest that exemptions as now interpreted by the courts go far beyond that intent.

"True farm-to-market movements restricted to products as reaped or grown" should be the governing limitation, according to E. Hasenritter, general traffic manager, Certainteed Products Corporation, Ardmore, Pa. The BSA's Mr. Partridge agrees with that position, holding that exempt commodities should be in the original state, meaning "grains, not processed, or any farm products, including poultry and eggs." He adds that frozen poultry "should be and is a processed commodity and should not be exempt."

Mr. Forral asks "if the original intent of the exemption was to help the farmer, why allow certain processors the benefit of this exemption and not all manufacturers that perform a similar function?"

"Anything beyond the original movement is a concession to a defi-

GN Introduces Dual-Purpose 'Plug Door' Car

Grain and lumber shippers both may benefit from this experimental 40-ft "plug door" car built recently in the Great Northern's St. Cloud, Minn., shops. Five such cars now in service are being watched closely to determine the practicability of the double-door feature. One conventional 6-ft sliding door and one 6-ft "plug door," similar to the type used on refrigerator cars, combine to make a 12-ft opening, as shown in the photograph. The wide access is particularly desirable for shipment of lumber and other bulky materials. For grain shipping, the car may be converted quickly into single-door use by closing the plug door. With its flush inside surface, the plug door becomes an integral part of the car side.

nite special interest" according to M. A. York, traffic manager, Bliss Company, Salem, Ohio. He warns that if concessions are granted they should "be safeguarded by strict regulation."

Fifty of 58 traffic men responding to the Freight Traffic poll favored Congressional review of the exemption provisions.

The result of the gradual broadening of exemptions (another case involving frozen fruit and vegetables was reported in Railway Age, Nov. 19, p. 10), has been detrimental to regulated transport agencies as well as general industry, according to D. L. Cook, transportation director, Denver Chamber of Commerce.

Bob C. Worley, commissioner, Fort Smith, Ark., Traffic Bureau, declared that "the continued extension of exempt commodities . . . is undermining our common carrier transportation system."

Concern for the welfare of common carriage is spelled out by C. F. Hatfield, traffic manager, Consolidated Fruit Company, Calgary, Alta. He says "it is only fair that all carriers indulging in movement of produce should be placed on the same basis as carriers moving other merchandise, viz., common carrier basis, subject to common carriers' regulations.

"Under exemptions, transportation becomes chaotic, as it is today. With charter carriers not being subject to regulation as to rates, etc., nobody knows what rates are being charged, ultimately waking up to find the bottom is being knocked out of business by trucks to whom rates seem of no importance."

Deception by exempt carriers is charged by J. J. DeLaney, traffic manager, American LaFrance Corporation, Elmira, N.Y. "Any point of destination other than that to primary market or primary processing plant, leads to subterfuge and to efforts to avoid proper supervision. It destroys the business of regular certificated lines," he says.

Claiming that exemptions have gone "far beyond" the original farm-to-market intent, J. R. MacDonald, traffic manager, Cornell (Wis.) Paperboard Products Company, says that "every use beyond the original intent has been doubled in abuse because of the need for a return haul."

E. E. Allison, traffic director, Anchor Hocking Glass Corporation, Lancaster, Pa., states that overextended exemptions "in many cases are being used to cover movements that should be regulated."

One spokesman calls for a "full scale review" of the exemption provisions of the IC Act, commenting that Congress should "determine just what place in transportation the unregulated carrier should have." Similarly, K. P. Tubbs, transportation manager, Dallas Chamber of Commerce, thinks Congress should prevent broadening of the exempt provisions and notes that the Supreme Court's April decision went "far beyond the original intention of the statute."

East-West Rate Pleas Seek 22% Increase

ICC "smokes out" clarification—Another revision of schedule postpones hearing and argument on 7% petition of southern roads, and changes timetable in 15% phase of eastern-western case

Eastern and western railroads have made it clear that the 7% freight-rate increase which they seek on an "emergency" basis is intended to be in addition to the 15% which they seek to improve their rates of return.

Both proposals have been incorporated by the Interstate Commerce Commission into the Ex Parte 206 proceeding, but the 7% motion, which came after the 15% petition, was silent as to whether the 7% was sought in addition to the 15%. Meanwhile, however, informed railroad men let it be known that 22% was being sought—15% to improve rates of return, and 7% to offset increases in wages and other costs which occurred subsequent to the filing of the 15% plea.

Smoked Out—Official confirmation of that came after the ICC said in a November 23 notice that it considered the 7% proposal to be part of a proposal of eastern and western roads "for a total increase of 15%, rather than in addition to the 15%." That amounted to commission advice to the effect that, if 22% were being sought, the pleadings should be amended to make them more specific.

David I. Mackie, chairman of the Eastern Railroad Presidents' Conference, said the eastern lines were seeking a 22% increase, and it was learned that this position is closely paralleled by that of the western lines. That position, of course, is consistent with the 15% petition which made this statement: "If operating expenses should be increased subsequent to the filing of this petition . . . it may become necessary to seek additional relief from the commission."

Presumably, however, the 15% plea might still be modified in the light of what comes out of the 7% plea. If the latter is granted only in part, the petitioning roads might seek to take up the slack by amending the 15% petition.

More Time—The commission's November 23 notice also announced another revision of the case's schedule. While last week's hearing and oral argument on the eastern-western 7% plea went on at Kansas City, as previously scheduled, all other dates were changed.

The changes give parties more time to prepare their cases. They comprised the second schedule modification, following a week after the commission had modified the original schedule. That previous modification was defended by the commission as one designed to "reconcile with fairness the interests of all parties concerned" (Railway Age, Nov. 26, p. 10).

The still further time was granted in response to various petitions. Among them were those of the National Industrial Traffic League, the National Association of Railroad and Utilities Commissioners, and the Tennessee Valley Authority.

Southern Case—The hearing on the petition of southern railroads for an immediate 7% increase was postponed from December 12 until January 7, 1957, and the oral argument

(Continued on page 10)

MARKET OUTLOOK THIS WEEK

Carloadings Down 14.8% in Week

Loadings of revenue freight in the week ended November 24 totaled 650,920 cars, the Association of American Railroads announced on November 29. This was a decrease of 112,956 cars, or 14.8%, compared with the previous week, which included the Veterans' Day holiday; a decrease of 21,030 cars, or 3.1%, compared with the corresponding week last year; and an increase of 67,400 cars, or 11.6%, compared with the equivalent 1954 week.

Loadings of revenue freight for the week ended November 17 totaled 763,876 cars; the summary, compiled by the Car Service Division, AAR, follows:

REVENUE FREIGHT CAR LOADINGS
For the week ended Saturday, November 17

District	1956	1955	1954
Eastern	121,817	127,508	116,582
Allegheny	147,859	150,790	128,779
Pocahontas	64,078	61,316	53,137
Southern	129,487	136,433	122,753
Northwestern	113,158	105,071	89,941
Central Western	130,367	126,241	126,965
Southwestern	57,110	58,857	39,189
Total Western Districts	300,635	290,169	276,095
Total All Roads	763,876	766,216	697,346
Commodities:			
Grain and grain products	52,611	52,772	58,668
Livestock	11,461	11,903	11,533
Coal	145,856	145,199	131,453
Coke	12,741	13,213	9,046
Forest Products	43,590	41,080	42,986
Ore	65,060	60,879	26,201
Merchandise l.c.l.	57,821	63,381	63,049
Miscellaneous	374,736	377,789	354,410
November 17	763,876	766,216	697,346
November 10	772,761	792,042	708,749
November 3	800,272	804,261	696,026
October 27	816,803	829,648	736,233
October 20	828,741	829,078	745,945
Cumulative total, 46 weeks	33,798,555	33,571,754	30,283,665

IN CANADA.—Carloadings for the seven-day period ended November 14 totaled 85,613 cars, compared with 91,157 cars for the previous seven-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
November 14, 1956	85,613	33,672
November 14, 1955	84,784	32,568
Cumulative Totals:		
November 14, 1956	3,900,801	1,522,846
November 14, 1955	3,566,011	1,431,021

New Equipment

LOCOMOTIVES

► *Diesel Repair Backlog Grows.*—Class I railroads had 942 diesel-electric units undergoing or awaiting repairs on October 1, up 96 units from September 1, and 58 more than on October 1, 1955; diesel fleet was up to 25,923, while number of steam locomotives was down to 4,251, AAR report summarized below shows.

	Owned or Leased October 1		Stored Serviceable October 1		Waiting Shops October 1	
	1956	1955	1956	1955	1956	1955
Diesel (A & B Units)	25,923	24,525	35	15	942	884
Steam (Locomotives)	4,251	6,503	468	779	737	1,048
Electric (Units)	601	662	12	9	64	73

► *Fernwood, Columbia & Gulf.*—Ordered one 900-hp diesel-electric switching unit, Electro-Motive; delivery scheduled for April 1957.

► *Ten Months' Installations Total 1,221.*—AAR reports new locomotive units installed by Class I railroads in first ten months of 1956 totaled 1,221 (1,218 diesel-electrics and three electrics), compared with 884 diesel-electric and ten electric units in comparable 1955 period; October installations alone consisted of 93 diesel-electrics and three electrics, compared with 108 units (all diesel-electric), in October 1955; units on order November 1 for Class I roads totaled 728 (704 diesel-electrics, 15 gas turbine-electrics and nine electrics), compared with 876 (849 diesel-electrics, 15 gas turbine-electrics and 12 electrics), on order November 1, 1955.

PASSENGER-TRAIN CARS

► *Brazil.*—This country's Santos-Jundiai Railroad has ordered 90 passenger cars from the Budd Company; purchase was made possible by an Export-Import Bank loan; cars will be used in high-speed, electrified suburban service; 34 cars will be completely assembled at Budd's Red Lion plant, Philadelphia, and shipped to Brazil; remaining 56 cars will be completed in Sao Paulo, Brazil, shops of Budd's Brazilian licensee, Material Ferroviario S/A "Mafersa," which will assemble 20 cars from knockdown sub-assemblies fabricated at Red Lion plant and completely build 12 motor cars and 24 trailers from material provided by Budd.

MARINE

► *Western Pacific.*—Albina Engine & Machine Works, of Portland, Ore., will build 375-ft, self-propelled car ferry authorized by WP directors earlier this year; vessel, to cost $1,305,000, is scheduled for delivery at San Francisco by August 1, 1957.

New Facilities

► *Gulf Mobile & Ohio.*—GM&O Land Co. purchased 84 acres of industrial property in Tupelo, Miss., to develop sites for manufacturing plants and warehouses.

(Continued from page 8)
was postponed from December 19 to January 11, 1957. This hearing and argument will be held at Washington. Thus far the southern roads are seeking only the 7%, and their plea for that was filed subsequent to the emergency-increase motion of the eastern and western lines.

In the 15% phase, the date for filing verified statements in opposition was postponed from December 24 until February 1, 1957. The deadline for filing reply verified statements was postponed from January 14, 1957, until February 15, 1957.

The Washington hearing for cross-examination of those filing verified statements is off from January 24, 1957, until February 25, 1957, and the Salt Lake City hearing is off from February 4, 1957, until March 6, 1957. Oral argument at Washington will be heard March 19, 1957, instead of February 11, 1957, and the former date is also the new deadline for filing memorandum briefs.

Passenger Service Must Stand Alone

Canadian National, seeking publicly acceptable service it can afford to provide, would model itself after supermarkets

"Disappearance of the railroads' monopoly has meant it is no longer possible to treat passenger service as a loss leader for the freight business," Canadian National President Donald Gordon told the Canadian Club at Winnipeg recently.

Development of competition from airlines, buses and automobiles has "steadily cut down our patronage," Mr. Gordon pointed out, "while on the other hand inflation has played havoc with our costs." Simultaneously, he went on, intensified freight competition makes it "increasingly difficult and painful to recoup additional costs through the freight rate structure" and shippers can no longer be expected to absorb passenger deficits.

"We are driven to the conclusion," Mr. Gordon asserted, "that the passenger business must be made to stand on its own feet so far as it is possible to do so within the limits of public convenience and necessity as defined by regulatory authorities."

How much railroads lose on passenger service is a debatable issue, Mr. Gordon went on. He said that CNR's costing methods show "the relevant figure is substantially less than we would get by using the Interstate Commerce Commission's formula," but it still comes to "many millions a year."

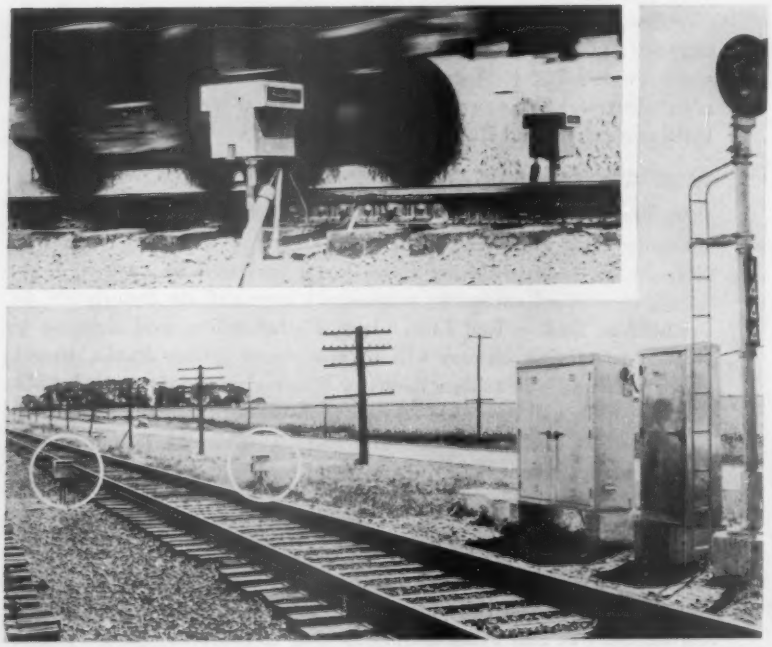
Canadian National, Mr. Gordon went on, is concentrating on what sleeper and dining accommodations it should provide on the basis of costs to the railroad and the limits of acceptability set by the public.

"If I had to sum up our objectives in one sentence, I would say that we are trying to introduce into the passenger business the same modern, smart but functional, and low-cost service that the supermarket has been able to provide in the retail food business, not forgetting that there is a place for personalized service."

Mr. Gordon emphasized that "we have no intention of degrading our passenger service below North American standards of comfort and convenience," but "we are aiming our investigations to discover what the volume user of rail passenger service wants and is willing to pay for, and this of course means we should cater mainly to average tastes and to average incomes."

He warned against change for its own sake, noting that existing equipment may often do its job satisfactorily through lacking "the slick appearance of the glamor of the new." Previously he had suggested what might be done "if the piper did not have to be paid." Passenger service at 200 mph, the latest "high-level, under-slung, self-propelled, streamlined and hyphenated units" on every branch line would be conceivable, Mr. Gordon said.

"For a very short time we would be very popular," he added, "but we



Electronic Hot Box Detector in Service

Automatic hot box detector, installed near Mineral, Ill., on the main line of the Rock Island, checks journals of freight trains moving at speeds up to 60 mph. The electronic "eye" in the metal case is trained on the journal box line of passing cars. Infra-red rays from an overheated journal activate electronic elements in the detector, which in turn control the wayside signals to display the red aspect to stop the train (Railway Age, May 14, p.8).

would not be managers. For again and again we must stop, not at the technical limits of what is feasible, but at the economic limits of what is prudent."

Similar considerations also control developments in other areas of railroad management, Mr. Gordon said, commenting on capital projects throughout the system. "Our plans," he said, "for improving the property must give careful recognition to the current shortages of labor and materials and to the serious inflationary pressures which are accompanying an unprecedented level of investment expenditures in the economy as a whole. . . . We have no intention of adding to the upward pressure on prices and, although our planning is going steadily forward, we are very conscious of the importance of timing in the execution of these plans."

Protests on Western Fare Increase Due December 28

The Interstate Commerce Commission has set December 28 as the deadline for filing protests against the western railroads' request that the way be cleared for their proposed 5% increase in passenger fares.

The western lines, in a November 21 petition, asked for such relief from the commission's tariff-publishing rules and modification of outstanding orders as would permit publication of the proposed increase. The commission on November 26 granted special permission for the filing of the tariffs—"subject to protest, suspension, or rejection."

On the same day it issued an order setting the December 28 date for receipt of protests against suspension of various outstanding orders which hold some of the involved passenger fares at present levels. The proceeding is docketed as Ex Parte No. 207.

Ralph Budd Gets AICE Merit Award

The American Institute of Consulting Engineers conferred its "Award of Merit" on Ralph Budd, retired president of the Burlington, at its annual dinner on November 27 in New York. President A. E. Perlman of the New York Central (who served under Mr. Budd on the Burlington), introduced him.

Previous recipients of the award have been C. D. Howe, Minister of Commerce of Canada; Vannevar Bush, the scientist; former President Herbert Hoover; and Benjamin F. Fairless, formerly of U. S. Steel.

Principal speaker at the dinner was Harlow H. Curtice, president of General Motors, who went into some detail about the great role Mr. Budd played in development of the diesel-electric locomotive. Mr. Curtice emphasized the important place in technological progress of the eager customer—which is what Mr. Budd was in his desire to get suitable motive power for the "Zephyr" train. Mr. Curtice said that Mr. Budd's zeal, and his cooperation with the manufacturer, expedited the development of the diesel-electric locomotive by several years.

BLF&E Settles; Other Cases Pushed

The three-year moratorium on changes in working rules, paid holidays, and other "minor" provisions remained chief stumbling blocks last week in the proposed long-term package agreement between the nation's railroads and some operating brotherhoods.

Eventual settlement, however, is expected to follow closely the pattern established in the November 21 wage-rules agreement between the carriers and the Brotherhood of Locomotive Firemen & Enginemen.

The carriers settled with the BLF&E on the basis established in the recent "non-op" case (Railway Age, Oct. 29, p. 4). The three-year agreement called for the following first-year wage increases retroactive to November 1:

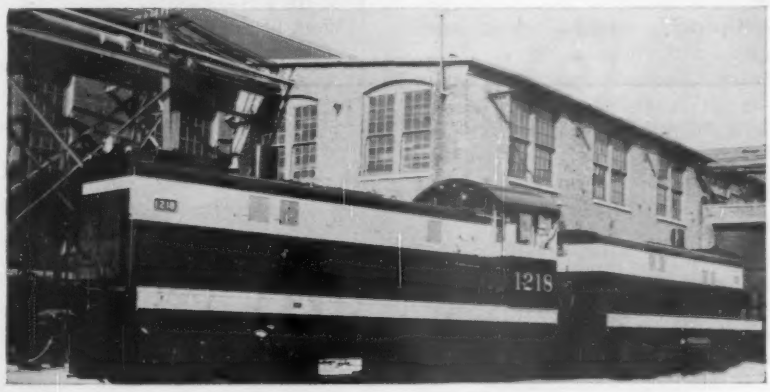
Road firemen and yard firemen not on a 5-day work week will receive a 10-cent hourly increase. Yard firemen on a five-day week will receive a 16-cent hourly increase.

Yard firemen not on a 5-day week at the time of the agreement but who later convert will receive an additional 6-cent increase effective with establishment of the shorter week.

Second and third year wage increases of seven cents an hour each will become effective November 1, 1957, and November 1, 1958.

At the option of the BLF&E, all or any portion of the second-year increase may be deducted and used for purchase of hospital, medical and related health service.

A moratorium until November 1, 1959, was established in connection with wage increases or decreases "or other rules applicable to compensation."



More Tractive Effort Than Any Other 1,800-hp Unit

Two 1,800-hp tandem diesel-electric locomotives, said by the manufacturer to develop more tractive effort than any other 1,800-hp units in the world, recently were shipped by Alco Products to the Oliver Iron Mining Division of U.S. Steel Corporation. The locomotives—each of which consists of an Alco DL-430 900-hp switcher and a DL-431 900-hp booster unit—will be used for transfer work at open-pit mining operations in the Mesabi iron range. Each locomotive has eight traction motors, four on the lead unit and four on the booster, which develop continuous tractive effort of 92,000 lb.

Return Under 4% Stymies RR Progress

Inadequate earnings, indicated by a rate of return averaging less than 4%, are the reason railroad managements can't do a lot of things they know should be done, William White, Delaware & Hudson president, said in New York City last week.

The low rate of return on railroad investment, Mr. White said, is directly responsible for the continuing freight-car shortage and the failure of the industry to spend more money for capital purposes.

Addressing the Railroad Division of the American Society of Mechanical Engineers at the society's annual meeting, the D&H chief executive said that to take care of the present freight-car shortage, plus the needs of a growing population, plus replacement of cars to be retired, would require the purchase of about 500,000 freight cars over the next five years.

"Even if all railroad shops and car builders' shops were worked to capacity, and materials were available, there would be difficulty in supplying this demand if the orders were forthcoming," Mr. White added.

"Then there are a multitude of other needs," he continued, "involving more diesel locomotives, replacement of overage passenger equipment, modern signaling and centralized traffic control, push button yards, improved communication facilities and reduction of grades and curvatures—all of which are necessary to meet the transportation needs of the country, improve service and promote efficiency and economy."

Railroad suppliers, Mr. White concluded, have a "big stake in this whole matter—proportionate to that of the railroads themselves. And all this would be in the public interest. So we ask you to take off your coats and roll up your sleeves. See your congressman. Mobilize with us and with the shippers of the country to overcome selfish interest. The opportunity is present. The time is definitely now."

NYC Plans Full Use of Road Diesels

A centralized motive power control bureau to assure that the New York Central's 1,300 diesel road locomotives are worked at maximum capacity has been established at the road's New York headquarters, W. B. Salter, manager of transportation, announced last week.

Operating round-the-clock, seven days a week, the bureau's staff coordinates movement of the road fleet with jobs where diesel power is needed. In this way, the railroad plans to alleviate "apparent shortages" in which available power is limited at one point while locomotives are idle elsewhere.

Work of the bureau is also tied in closely with the Central's new passenger schedules which went into effect October 28. The new time table requires intensive utilization of locomotive power at hours when patrons prefer to travel.

To employ motive power to the best possible advantage, the bureau's staff charts for each locomotive a "cycle"—a complete east-west run—beginning and ending at its home terminal for inspection and possible repairs.

Custom-Built Car Simplifies Steel Shipping

Twelve buckets with individual nests are carried on this specially designed flat car built by the Tennessee Central to help a steel shipper attain efficient, economical transit of his product. Each bucket is an individual unit with 39-cu-ft capacity and is held in place by crib blocking bolted to the car deck. Buckets are of open-top construction with a door at one end. The car is a converted fish-belly type with specially installed fixed side posts and top rails. The TC has two such cars in service and anticipates a need for several more units of similar design.

ICC Will Again Consider Closing Rail Accident File

The Interstate Commerce Commission will give further consideration to keeping confidential the monthly reports of railroad accidents filed on Form T. Similar accident reports filed by motor carriers are already kept confidential at the commission.

The plan to give further consideration to closing the railroad file was announced by the commission in a November 26 notice, which was issued along with the 1956 revision of the "Rules Governing Monthly Reports of Railroad Accidents." The revised rules are scheduled to become effective January 1, 1957, but the notice advised interested parties that they may propose further changes in written statements due February 1.

Such statements may also give views on the matter of making the reports confidential. The commission advised interested parties nearly a year ago that it was then considering that matter, but it announced subsequently that no action would be taken to close the file before January 1, 1957.

The delay was decided upon after the Subcommittee on Government Information of the House Committee on Government Operations became interested. The subcommittee questioned members of the commission at a hearing where Chairman Arpaia said no final action would be taken to close the file until there was full hearing.

The subcommittee referred to the matter briefly in one of its reports which noted the commission's view that the accident reports "would be more accurate if the facts did not have to be made public." This was in the commission's original notice about the matter, but that also mentioned a desire "to prevent any improper use of these data."

Technical Tidings

Selected from December Railway Monthlies

Simple lightweight air brake equipment, the LWE type developed by the New York Air Brake Company, is the subject of an article in Railway Locomotives and Cars giving a detailed description of its design and operation. Of particular interest is its application on Pullman-Standard's "Train-X" and Budd's "Pioneer III."

The current Railway Track and Structures is devoted entirely to a comprehensive analysis of the engineering and maintenance-of-way practices of the Santa Fe. Fourteen articles in the issue cover such matters as the Santa Fe's maintenance-of-way organization, its track and roadway standards, and the methods and equipment used in renewing ties, surfacing track, laying rail, cleaning ballast, stabilizing the roadbed, grading and ditching, and controlling weed and brush on the right of way. The road's bridge and building construction and maintenance practices, the methods used in treating ties and other timbers, and its setup for keeping work equipment in repair are also described.

Callers in a Northern Pacific freighthouse can use either a portable loudspeaker or a telephone handset when checking LCL freight with a central office. This and other details of this flexible freighthouse communications system are reported in Railway Signaling and Communications.

Lined with rubber-faced steel and Plastinail floored, ACL's latest box cars are breaking away from convention. Railway Locomotives and Cars not only describes the design of the cars but gives the reader an "in the shop" account of the methods used in their construction.

Automatic selective control, based on the number of cars in an approaching train, is a feature of a crossing gate installation on the Illinois Central described in Railway Signaling and Communications.

Short Lines Ask Through-Route Change

The American Short Line Railroad Association will undertake to have the next Congress adopt its proposed amendment to the Interstate Commerce Act's through-routes provisions.

The proposed amendment, which was opposed by the Association of American Railroads at Congressional hearings this year, would modify section 15(3) to incorporate therein the prohibitions that through routes shall not be cancelled nor rendered inoperative by new or revised joint rates, unless such arrangements are approved by the Interstate Commerce Commission after hearing.

On the "rendered inoperative" matter, short lines complain that this has been accomplished, without actually cancelling routes, by the device of publishing rates, subject to routing restrictions, which are lower than open-routing rates on the same traffic.

The amendment proposal was made by the Short Line Association's president, J. M. Hood, when he appeared last May at House Interstate Commerce Committee hearings on bills to implement recommendations of President Eisenhower's Cabinet Committee on Transport Policy and Organization. Mr. Hood called the proposal of "paramount importance" to members of his association (Railway Age, May 28, p. 11). The AAR's opposition was set out in a statement filed with the committee after Mr. Hood's appearance.

Subsequent consideration of the matter by the Short Line Association has crystalized it into a "three shall nots" program, the "shall nots" being these: (1) No through routes shall be cancelled; (2) no through routes shall be withheld from new or revised rates; (3) no participating carrier shall be eliminated by cancellation of joint rates, changes in descriptions, or in minimum weights, or other similar rate modifications.

A special committee of the association recently agreed on the language of a proposed amendment which would accomplish the desired objective. The proposed amendment would incorporate into section 15(3) the following:

"No through route shall be cancelled, or withheld from new or revised rates, and no joint rate, fare, charge or classification shall be cancelled via any such through route, except by agreement of all carriers whose lines are embraced therein, unless the commission shall, upon application and after hearing, find that such cancellation, or withholding in new or revised rates, is consistent with the public interest without regard to the provisions of paragraph (4) of this section, and the burden of proof shall be upon the carrier or carriers proposing such cancellation, or withholding, to show that the cancellation, or withholding, is consistent with the public interest, without regard to the provisions of paragraph (4) of this section."

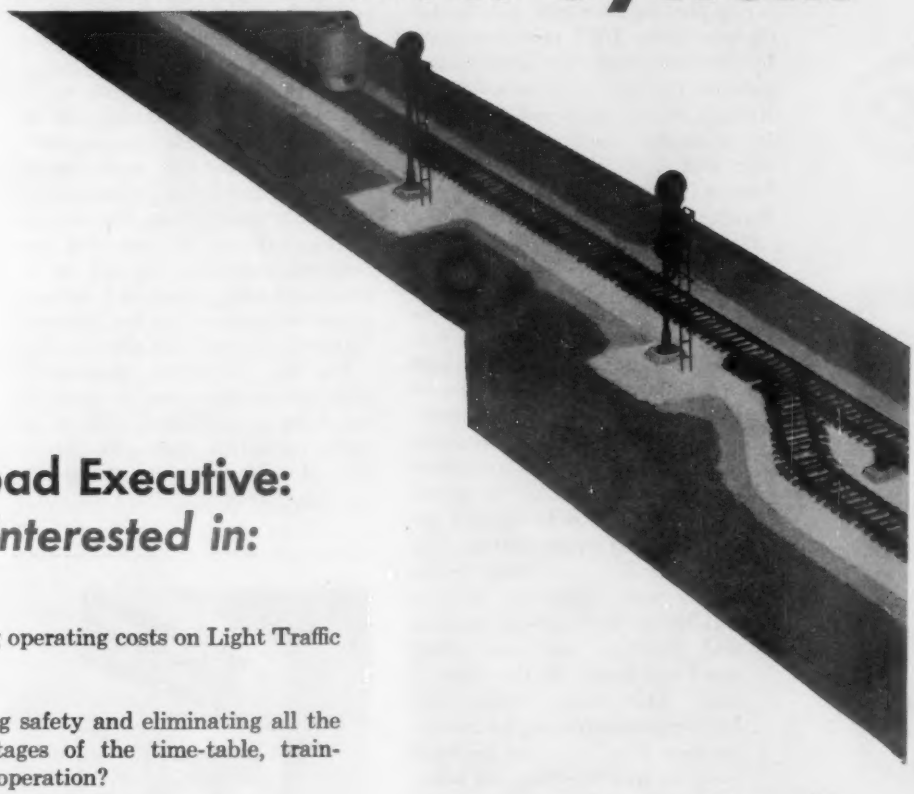
Paragraph (4) limits the power of the commission to prescribe through routes which short-haul participating carriers, i.e., it prohibits short-haul-

(Continued on page 64)

Hot Soup Coming Down!

Recent installation of a hot soup vending machine in the Western Pacific's Sacramento, Cal., general shops has met with such favor that employees are said to have requested additional machines. The vendor—a product of the Vendo Company, of Kansas City, Mo.—dispenses, for 15 cents, any one of three varieties of Campbell's soups in individual, 8-oz, ready-to-serve cans.

NEW UNION C.T.C. System



Mr. Railroad Executive:
Are you interested in:

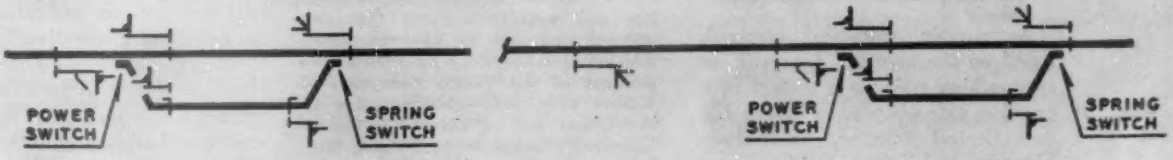
1. Reducing operating costs on Light Traffic lines?
2. Increasing safety and eliminating all the disadvantages of the time-table, train-order method of operation?
3. Improving train operation with faster schedules and fewer delays?
4. Obtaining the most modern, efficient and flexible traffic control system at the lowest possible installed cost?

If your answers are "yes," then get complete information on this new UNION C.T.C. System for Light Traffic Lines from our nearest district office. Ask for Bulletin No. 168.

MODEL showing the basic signaling arrangement for UNION Light Traffic C. T. C. System. This new low-cost C. T. C. system provides all the basic functions of the more elaborate systems, but can be installed at a cost comparable to automatic block signaling. It complies with I.C.C. regulations and the A. A. R. Standard Code. Furthermore, the system can be expanded to accommodate future changes in traffic.

Two installations similar to this basic C. T. C. system have been in service for several years and are giving efficient and flexible traffic control.

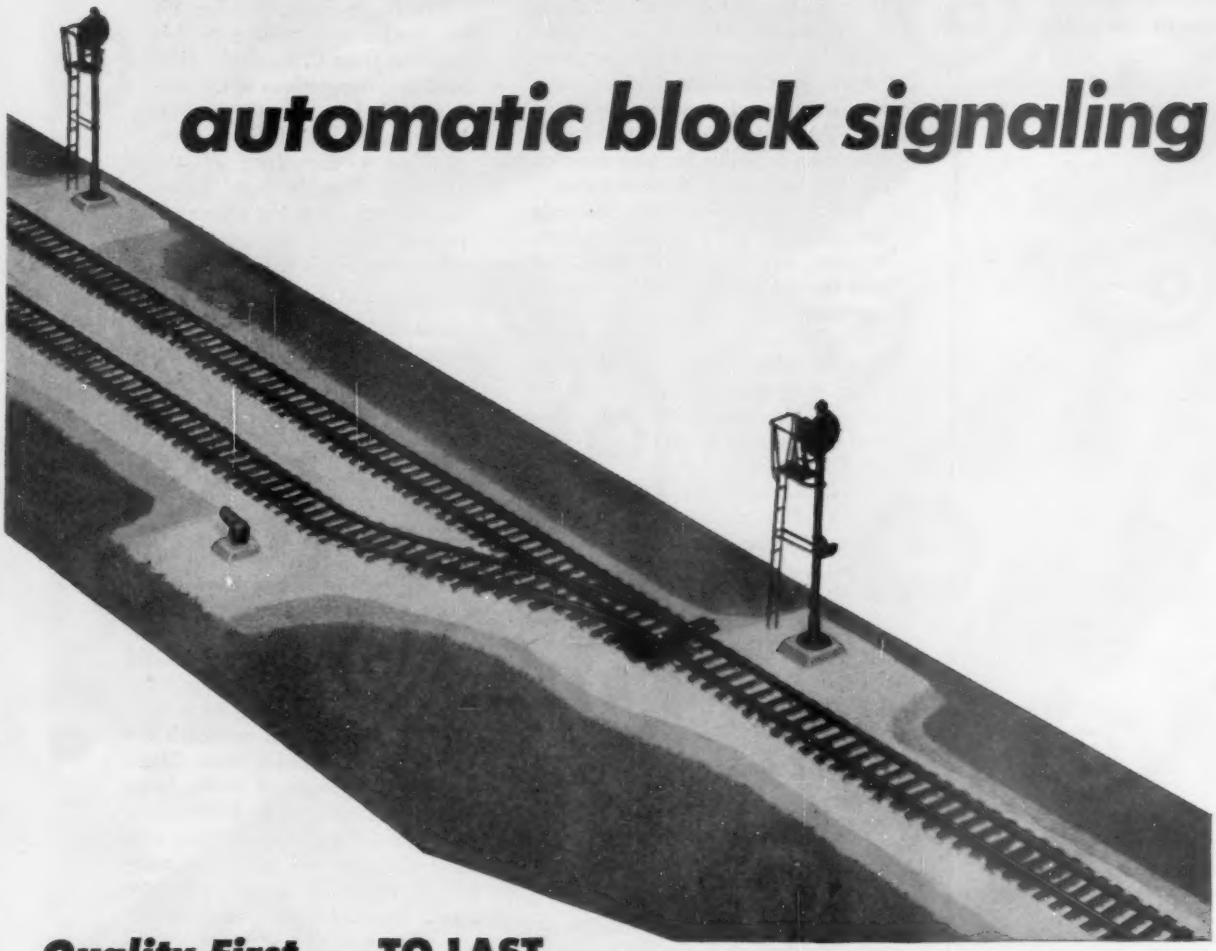
TRACK LAYOUT for Light Traffic C. T. C. System. Sidings may be arranged to best accommodate traffic with power switches at either end.



for Light Traffic Lines

at a cost comparable to

automatic block signaling



Quality First . . . TO LAST

UNION SWITCH & SIGNAL
DIVISION OF WESTINGHOUSE AIR BRAKE COMPANY
SWISSVALE, PENNSYLVANIA

NEW YORK.....CHICAGO.....PITTSBURGH.....ST. LOUIS.....SAN FRANCISCO

Questions and Answers

Of current interest

to the Transportation Department

Can the practice of "prior classification" of freight cars in interline movement be more widely followed, with advantage to the carriers . . .

?

CONDUCTED by G. C. RANDALL, district manager, Car Service Division (ret.), Association of American Railroads, this column runs in alternate weekly issues of this paper, and is devoted to authoritative answers to questions on transportation department matters. Questions on subjects concerning other departments will not be considered, unless they have a direct bearing on transportation functions. Readers are invited to submit questions, and, when so inclined, letters agreeing or disagreeing with our answers. Communications should be addressed to Question and Answer Editor, Railway Age, 30 Church Street, New York 7.

Yes—under certain conditions.

We feel the practice of classifying [interline] traffic for connections is being adopted as widely as possible. In saying this we have in mind present-day yard facilities, destinations—and volume—of cars for the many individual connecting railroads which are available for movement on regularly scheduled dispatch trains.

The Illinois Central does relatively little classifying for connecting lines. We do, however, block groups of cars for delivery to specific connecting lines at certain junctions (e.g., Council Bluffs, Iowa; East St. Louis, Ill.; Martin, Tenn.; Birmingham, Ala.; Shreveport, La.). This practice helps to expedite delivery on arrival and therefore to protect "tight" connections.

You also asked about the practicability of establishing more solid trains of a single classification.

In many cases where morning and evening trains are scheduled from certain large terminals, it would not be practicable to hold tonnage for a single classification without disrupting through schedules to many destinations. The Illinois Central is vitally concerned in prior-classification of freight trains to minimize intermediate yard handling. A number of outstanding examples involve maintracking many of our dispatch trains at intermediate terminals, such as Freeport and Fort Dodge on our western lines; Clinton, Ill., on our trains operating between Chicago-St. Louis; and at Champaign, Ill., Centralia, North Cairo; Jackson, Tenn.; Gwin and McComb, Miss., on trains operating on our main lines Chicago to the South and Southeast.

In May 1956 we established train CN-5 on a 32-hr, 30-min schedule for the 900-mi run, Chicago to New Orleans. All loading originating or received from connections at Chicago for a 24-hr period destined to New Orleans and beyond, only, is held for CN-5. Train picks up cars for New Orleans and beyond at two or three terminals en route, particularly at Memphis, where considerable New Orleans tonnage is added.

Establishing more solid trains of a single classification undoubtedly would tax some yards beyond their present capacities. This is due in part to the congestion which would result in some instances from holding tonnage for several trains, each of one solid classification.

A stepped-up policy of prior classification leading to trains of one solid block would mean many changes for the railroad. It would be advantageous, of course, to approach the matter on a systemwide basis. Much depends on volume of traffic for a single distribution. The Illinois Central has a multitude of junctions with other roads, as well as a large number of important intermediate stations. Therefore, we cannot expect more than a small percentage of total traffic to be for a single destination. *—O. H. Zimmerman, vice-president —operation, Illinois Central.*

I recall reading several years ago a suggestion by someone that roads for which prior classification was done by another road should pay so much per car for the service. Anyone have any ideas on the feasibility of this suggestion? Could it promote greater amounts of prior classification on interline traffic?— *G. C. R.*

[In this column, October 22, we carried one answer to this question from C. H. Sauls, vice-president—operations of the Seaboard Air Line. In the November 19 column, R. J. Stone, vice-president — operations of the Frisco, gave us his views. Today, another top operating officer expresses himself in regard to prior classification.—*G.C.R.*]

DEDICATED TO BETTER RAILROADING

The Ton-Mile

AMERICAN Brake Shoe COMPANY

DECEMBER 1956

THE TONNAGE RETURNS TO THE RAILS: The growing trend to TOFC, or "piggyback", reflects the progressive methods railroads are using in their efforts to meet increasing competition.

a **Realistic Look** at Journal Bearing Economics

A forecast of future costs for solid bearing operation in the light of recent developments — together with a review of roller bearing life expectancy in freight service.

SOMETIMES it is necessary to reaffirm old truths – not just to clear away the artificial haze created by unsubstantiated claims, but also to chart new courses for progress and improvement, to find better ways of accomplishing old ends. All progress is change; but not all change is necessarily progress. Today railroad officials are understandably seeking the means to improve freight service by reducing bearing road failures and operating costs. How best to accomplish these ends is a principal aspect of this paper.

History and Background

In November, 1955 the AAR Mechanical Division published "Comparative Economics of Journal Bearings" – the results of an investigation made at the request of the AAR Board of Directors. Though not yet released for general publication, this AAR report has been widely circulated within the industry. In brief, its findings were that the current price of roller bearings for freight cars is too high to permit recovery of the investment – and that from an economic standpoint roller bearings could not be expected to pay their way. These findings were reached despite granting to the unproved low-capacity roller bearing a life expectancy and failure incidence of 75% of the heavy-duty passenger car bearing – a figure far in excess of that justified by their respective service conditions.

The existence of the AAR study has prompted a wide resurgence of roller bearing claims in an effort to counteract its influence. The most recent, and a typical example is the Timken brochure "The Use of Roller Bearings on Freight Cars" – reviewed in the Railway Age of July 30, 1956. In brief, this Timken study, by exaggerating solid bearing costs and minimizing or ignoring comparable roller bearing costs, arrives at a break-even point almost three times that established by the AAR. This extreme variation between AAR unbiased findings and Timken's own figures should certainly prompt closer examination of their major differences.

Errors in Solid Bearing Costs

In the calculation of solid bearing costs, Timken has committed several serious mistakes. In the first place, it is assumed that 6,000,000 solid bearings were applied to existing freight cars in the year 1954. As solid bearing manufacturers the writers are in a position to state accurately that only 4,360,000 solid bearings were purchased by American and Canadian railroads for freight car maintenance in that year – with approximately 600,000 additional bearings used on passenger cars and new freight cars.

A second serious error is that Timken has charged against the solid bearing assembly all accidents resulting from broken journals regardless of cause. This means that solid bearings have been charged with 41 accidents caused by Journals Broken, Due to Defects (ICC Code 2419) and 206 accidents due to Journals Broken, Other Causes (ICC Code 2421), in addition to the 391 accidents specifically ascribed by the ICC to Journals Broken, Overheating. At the same time, Timken has estimated comparable charges against roller bearings by using the same cost per accident as with solid bearings, coupled of course with an extremely low accident rate.

Actually in 1954, a total of 4,109 derailments from all causes was reported. This means that better than 90% of all derailments resulted from causes unrelated to bearing failures. The extra cost per accident for damage to equipment if roller bearings were prevalent would have to be increased for all accidents to provide for replacement of expensive roller bearing cars. These costs, as well as costs solely chargeable to roller bearing failures, should certainly be considered in any comparative economic study.

Third, Timken has more than doubled the incidence of cut journals found during routine inspection and repacking over the comparable incidence developed by the AAR. In point of fact, the AAR study reports a total of 110,516 cut journals found during these inspection periods; whereas Timken, with very little data, calculates comparable costs on the basis of 258,251 cut journals. It is extremely doubtful that Timken's figure will bear up under careful examination.

But by far the most serious error in the Timken study is the huge expense charged against the solid bearing for locomotive and car delays based on problematical earnings and cost of car ownership as related to average car shortages and surpluses in a given year. These charges, reaching a total of over $107,000,000 per year, or 48% of the total presumed savings, were specifically disallowed in the AAR study after thorough investigation and analysis.

The roller bearing interests have always contended that earnings are lost because of delay days and that these problematical earnings can be counted as costs for solid bearing operation. Also, they have always found it necessary to exaggerate the number of delay days per solid bearing car in order to contend for an economic advantage. However, as has been pointed out many times, it is unsound to consider problematical earnings as costs. If prospective earnings justify additional investment to increase hauling capacity, it should be borne in mind that for the same amount of money required to buy a given number of roller bearing cars, up to 10% more cars with solid bearings can be purchased – resulting in up to 10% additional available car days. This means an increase in up to 10% more revenue for the same initial invest-

ment, less the difference, if any, in the expense of maintaining bearing assemblies on the two groups of cars. Should these extra cars not be needed, the initial investment can be reduced by approximately 10% and the return per car dollar invested would show a significant increase (up to 10%) over the same investment made in roller bearing cars.

Likewise, from a practical standpoint it is impossible to relate any increase in available car days to a reduction in equipment. To illustrate: in 1950 the railroads with 1,721,269 cars moved 38,902,641 carloads of freight whereas in 1954 with 1,736,057 cars 33,914,953 carloads were moved. The cars then were loaded 22.6 times or once each 16.15 days in 1950 and were loaded 19.5 times or once each 18.7 days in 1954. Now if in 1954 cars had been loaded at a rate of 22.6 times per year as in 1950, theoretically only 1,500,662 cars would have been required. Actually, no such saving could or ever can be effected because the railroads' car inventory requirements are determined by peak loads and seasonal demands of specialized commodities – grain, coal, etc. The car pool, like working capital, must be sufficient to meet any emergency.

Roller Bearing Life Expectancy

If realistic solid bearing costs for damage to equipment, for cut journals found during routine inspection and periodic repacking, and for bearing consumption are used, as indicated above, and if exorbitant costs for delays are eliminated from consideration, *the annual savings per car with roller bearings would not be sufficient to justify their use – even if Timken claims for performance and life were allowed.*

From an engineering analysis, however, there are indications that the 25 year life and average annual replacements of 1.9% which Timken has assumed may never be realized with the unproved low-capacity roller bearings now being offered. Should this optimistic life expectancy not be reached it would seriously affect Timken estimates of hot box costs, damage to equipment, and inspection periods – as well as annual replacement costs. Thus, it becomes most important to examine these claims very closely.

The commonly accepted figure for roller bearing life in passenger service is 25 years. The low-capacity freight car roller bearing is said by its manufacturers to have a service life of only one-fifth the passenger car roller bearing. If then, we evaluate the life expectancy of the passenger car roller bearing in freight service, and divide by 5, we can arrive at a reasonable life expectancy of the thus-far-unproved, low-capacity freight car bearing.

Obviously, there are many conditions in freight car service that are different from passenger car service, and they all have an effect on bearing life. Five principal factors can be used to correct for these differences. These are the Load Factor, Mileage Factor, Speed Factor, Impact Factor, and Vibration-Thrust-Brake Load Factor. Each one of these factors has been assigned a numerical value, and their product gives a Comparative Life Factor which multiplied by passenger bearing life and divided by 5, yields a reasonably accurate estimate of the freight car bearing life. Thus, when:

Lf = Freight Car Bearing Life in Years
Lp = Passenger Car Bearing Life in Passenger Service in Years, or 25
W = Load Factor, or 1
M = Mileage Factor, or 4.45
S = Speed Factor, or 1.58
I = Impact Factor, or .2, and
V-T-B = Vibration-Thrust-Brake Load Factor, or .85

We may derive the following formula:

$$Lf = \frac{Lp\ (W \cdot M \cdot S \cdot I \cdot V\text{-}T\text{-}B)}{5}, \text{ or } 5.98$$

The product of the values assigned to W, M, S, I, and V-T-B, or the Comparative Life Factor, is 1.196. This value, applied to our equation establishes a life expectancy for the low-capacity roller bearing of just under 6 years.

How the values for the component factors are determined is explained below.

Load Factor – The AAR Committee on Journal Roller Bearings in Circular D.V.-1361 of 5/26/56 recommends that "Freight car roller bearings be designed for a minimum life expectancy of 500,000 miles service with a load factor of 80%, equivalent to full rail load in one direction. Life expectancy is defined as that life at which 10% of the bearings may have been replaced for fatigue." 80% of the full load rail weight of 169,000 pounds is 135,200 pounds rail weight. This rail weight, less wheel and axle weights of 9,000 pounds, amounts to a weight per bearing of 15,775 pounds.

The maximum load per 5½ x 10 axle permitted in passenger service is 34,000 pounds for speeds up to 85 m.p.h., per AAR Manual, page D-4-1956. Over 85 m.p.h., it is limited to 32,000 pounds. Assuming 50% of passenger cars are sometimes used on maximum speed service, the average maximum weight

TABLE I

LIFE EXPECTANCY CALCULATIONS for Low-Capacity Freight Car Roller Bearing

(Projection of Comparative Life Factors of 5½ x 10 Roller Bearing for 100,000 Lb. Capacity Freight Car)

1.	Freight car weight on rails (80% load factor)	135,200 Lbs.
2.	Weight of wheels and axles	9,000 Lbs.
3.	Freight car weight on bearings (Line 1 – Line 2)	126,200 Lbs.
4.	Load per freight car bearing (Line 3 ÷ 8)	15,775 Lbs.
5.	Load per passenger car bearing	15,775 Lbs.
6.	Ratio of Load, freight over passenger bearing (Line 4 ÷ Line 5)	1.0
7.	Comparative Load Factor, freight over passenger bearing	1.0
8.	Comparative Speed Factor, freight over passenger bearing	1.58
9.	Comparative Mileage Factor, freight over passenger bearing	4.45
10.	Comparative Impact Factor, freight over passenger bearing	0.20
11.	Comparative Vibration—Thrust—Brake Load Factor, freight over passenger bearing	0.85
12.	Projected Comparative Life Factor, freight over passenger bearing (Product Lines 7, 8, 9, 10 and 11)	1.196
13.	Passenger Car Roller Bearing Life in passenger service	25 Yrs.
14.	Theoretical Life of Passenger Car Roller Bearing in freight service (Line 12 × Line 13)	29.90 Yrs.
15.	Theoretical Life of Freight Car Roller Bearing over passenger car roller bearing (Timken Report)	0.20
16.	Projected Theoretical Life of Freight Car Roller Bearing in freight service	5.98 Yrs.
17.	Life of the Freight Car Roller Bearing compared to passenger car roller bearing (Line 16 ÷ Line 13)	23.92%

imposed on the passenger car axle is 33,000 pounds and on the bearing it is 16,500 pounds. For all practical purposes, the average passenger carload per 5½ x 10 bearing is the same as the 80% loaded 5½ x 10 freight car bearing, since the passenger cars average 95% of maximum permissible weight on axles (16,500 lbs. × .95 = 15,675 lbs.). Therefore, the load factor for a freight car roller bearing compared to a passenger car roller bearing is 1.0.

Speed Factor – Average passenger train speed on 52 Class I railroads in the United States was 38.4 m.p.h. in 1954 and 38.9 m.p.h. in 1955 (Report M-200, Interstate Commerce Commission).

Passenger car wheels are 36″ in diameter and freight car wheels are 33″ in diameter. Since journal speed in rpm is the speed to be considered for capacity of roller bearings, the average passenger car speed has to be decreased 8.33% to compensate for wheel diameter. Therefore, the average passenger car speed for 1954 and 1955 is $\frac{38.4 + 38.9}{2} \times \frac{33}{36}$ or 35.4 m.p.h. for comparative purposes.

The average freight train speed was 18.7 m.p.h. in 1954 and 18.6 m.p.h. in 1955 (1955 Year Book – Eastern Railroad Presidents' Conference, page 45). These speeds include all stopped time, waiting time on sidings, time for switching, pick-up and set-out which would increase these speeds at least 20%, based on field test data available from several railroads. It is estimated that the average freight train *running* speed today is $\frac{18.7 + 18.6}{2} \times 1.20$ or 22.4 m.p.h. The Speed Factor then is $\frac{35.4}{22.4}$, or 1.58.

Mileage Factor – Average journal revolutions per year is the function that affects bearing life, not car miles. The diameter of passenger car wheels is 36″, the diameter of freight car wheels is 33″. Therefore, passenger car miles must be multiplied by $\frac{33}{36}$ or .9166 to be equivalent to freight car miles for the same number of journal revolutions.

The national average passenger car annual mileage is 78,700 and the average freight car annual mileage is 16,200. The Mileage Factor then is $\frac{78,700}{16,200} \times .9166$ or 4.45.

Impact Factor – The increased impact to which a freight car bearing is subjected over that imposed on the passenger car bearing is the most serious factor affecting bearing life. Coupling shock is the principal cause of brinnelling, surface cracking, flaking and shell-out of rollers on both inside and outside races. The small areas of contact between the rollers and the races are highly stressed in compression by this shock impact to the point that load bearing surfaces are deformed beyond their elastic limit. Cracks can be started which shorten the useful life of the bearing and cause failures in service.

Despite the existence of standard instructions limiting freight car coupling impact speeds to 4 m.p.h., from a practical standpoint these speeds are often exceeded. Coupling speeds of 6 m.p.h. in hump yards and classification yards are common and may be considered the average. Passenger cars, on the other hand, are coupled at maximum speeds of 2 m.p.h., or at one-third the speed of freight cars. Since the energy of impact varies as the square of the speed, coupling shock then is at least 9 times more severe in freight service.

Freight cars are also coupled at least eight times as often as passenger cars per year so overall coupling shock as a factor in bearing life is estimated at 72 times as severe.

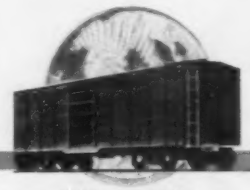
It is therefore conservatively estimated that from the standpoint of impact the life of a roller bearing in freight service will be only one-fifth of the life of the same bearing in passenger service, giving an Impact Factor of .20.

Vibration-Thrust-Brake Loading–As is well known, freight car wheel treads receive less maintenance than passenger car wheel treads, increasing damaging journal vibration and decreasing the life of freight car roller bearings. Freight cars travel over track on sidings, in freight yards, on spurs and on branch lines seldom traveled by passenger cars. For that reason, such track is maintained at a lower standard where no passenger comfort is involved. This causes impacts and concentrated loads to be imposed on freight car bearings to which passenger car bearings are seldom subjected.

Passenger car trucks are so designed as to impose much lower thrust loads on the bearing than in the case of freight car trucks where the side frame of the truck is restricted in its lateral movement by the bearing. Thrust loads on passenger car bearings are imposed by axle lateral forces only. Thrust loads on freight car bearings consist of the substantial increment imposed to help hold the truck side frames in place in addition to the axle lateral forces.

Passenger cars have clasp brakes with opposing shoes on each side of the wheel that neutralize braking forces and do not increase bearing loads. Freight cars use a single shoe per wheel, exerting a pressure of 4,000 pounds against the wheel in a service application, so the bearing load is increased during braking by the amount that the resultant of

TABLE II
ANNUAL COSTS PER CAR
Solid Bearings vs. Roller Bearings



Description	Solid Bearings	Roller Bearings
Repairing hot box set-outs	$ 9.05	$ 0.59***
Damage to equipment–overheated journals broken	2.01	0.06***
Fires due to hot boxes	0.29	0.01***
Cut journals found during routine inspections and periodical repacking	1.35	—
Defective bearings found during routine inspection other than wheel renewal and periodical repacking	2.69**	—
Periodical lubrication per AAR Rules 66 and 66-A	11.10	4.78
Labor – not included above		
Routine yard inspection and service	40.82	15.17
Cleaning and repacking journal boxes; wheel defect removals	0.20	—
Applying spring packing retainers	0.08	—
Nine year roller bearing inspection	—	2.53***
Replacing defective bearings	—	2.46
Material – not included above		
Defective bearing replacements	4.36**	47.05*
New axles (replacements)	3.35	4.13
Journal box oil or roller bearing grease and solvent	2.87	0.54
Prepared packing, journal box lids, spring packing retainers, bearing wedges, dust guards	3.20	—
TOTALS	$81.37	$77.32
ANNUAL DIFFERENCE IN COST, PER CAR:		$4.05

*Roller bearing cost calculated thus:

Timken figure for bearing, 25 year life	$11.29
Six-year life correction factor (25 ÷ 6)	× 4.167
Annual roller bearing replacement cost	$47.05

**AAR figures corrected for 4,500,000 bearings per year.
***AAR figures – subject to adjustment upward to reflect 6-year roller bearing life rather than 25-year roller bearing life.

vertical load and braking pressure exceeds the vertical load. This amounts to about 2%. During braking this increased bearing load decreases the life to $\frac{1}{1.02^3}$ or 0.94, a reduction of 6%. Considering all these factors, it is estimated that they will shorten the life of a roller bearing in freight service by 15%. This factor of .85 is used to compare life of the freight car roller bearing to the passenger car roller bearing as related to these conditions.

What It All Adds Up To

The product of all the above factors is the Comparative Life Factor, or 1.196. This factor times the 25-year life of the passenger car roller bearing in passenger service is the anticipated life of that bearing in freight service, or 29.90 years. Since its manufacturers agree that the low-capacity freight car bearing will have a service life only one-fifth that of the passenger car bearing, it follows that this new bearing will last only 5.98 years.

If the low-capacity freight car roller bearing is to have a life expectancy of 6 years or less, as is indicated by thorough analysis, it would naturally affect hot box costs, damage to equipment costs, inspection costs, etc. *But the major item affected would be the annual bearing replacement cost which would soar from $11.29 per car (per Timken report) to $47.05 per car.* Using this figure, together with other roller bearing costs developed in the AAR study, and comparing overall roller bearing costs so determined with AAR solid bearing costs, a difference in annual costs of only $4.05 per car would result. (See Table II.) In accordance with the AAR formula for calculating break-even points, this would permit an investment of only $346.02 per car for roller bearings.

TABLE III
ANNUAL LABOR & MATERIAL COSTS PER CAR For Maintenance of Solid Bearing Assemblies

Description	Current Costs (AAR)	Predicted Costs
Repairing hot box set-outs	$ 9.05	$ 2.26
Damage to equipment	2.01	.50
Fires due to hot boxes	.29	.07
Cut journals found during routine inspection and servicing	1.35	1.01
Defective bearings found during routine inspection	2.69†	1.35
Periodical lubrication — Rule 66	11.10	5.55
Labor — not included above		
Routine transportation yard inspection	40.82	24.11
Cleaning and repacking journal boxes at wheel defect renewals	.20	.20
Applying spring packing retainers	.08	.00
Material — not included above		
Defective bearing replacements	4.36†	2.18
New axles	3.35	3.35
Journal box oil	2.87	1.44
Prepared packing (lubricators)	1.73	13.33
Journal box lids	.64	.64
Spring packing retainers	.46	.00
Journal box wedges	.29	.29
Journal box dust guards (seals)	.08	1.67
TOTALS	$81.37	$57.95

†AAR figures corrected for 4,500,000 bearings per year.

What of the Future?

From a practical as well as an economic standpoint, in order to obtain better bearing performance the railroads should continue to pursue their present course of intensified development of existing bearing assemblies.

Improved solid bearing assemblies, equipped with pad-type lubricators and the means for preventing excessive axle displacement during impacts, have already proved themselves both in the laboratory and on the road. These developments may soon be mandatory on all new equipment. Sufficient information is already available to permit estimates of overall operating costs when this transpires. Conservatively, based on reports published by the railroads, the incidence of car setouts can be reduced to one-fourth the frequency that was experienced in 1954. This will result in corresponding reductions in damage to equipment and fires from that source. Bearing life should be doubled, and there should be at least a 25% reduction in cut journals.

These developments also assure the practicability of 3-year intervals for periodic lubrication and inspection of bearing assemblies as required under Rule 66 — halving current cost. Moreover, when used in conjunction with rear seals, they will make yard inspections on a calendar basis possible. The same number of inspectors may be required because bearings, whether solid or roller, do not determine the size of the inspection force. But oilers' time and oil consumption should be cut in half. The effect of all these benefits on operating costs can be seen in Table III.

Note particularly that these savings will be partially offset by an increase in the cost of lubricators and seals for maintenance and operation. A three year life for both lubricators and seals is assumed, with initial costs of $40.00 and $5.00 per car respectively. No consideration has been given stores expense or scrap credits which would tend to offset each other. It is entirely possible that certain lubricators may be reconditioned for repeated re-use which would effect very substantial savings in annual replacement costs.

It is believed that shimmed journal stops for preventing excessive axle displacement will so reduce the requirements for an economic rear seal as to make possible its development and early availability at the approximate price indicated. It is recognized, too, that the use of shimmed stops will involve slight extras for re-shimming at wheel change. However, these costs for re-shimming may be recovered in full measure by reduced wheel flange wear and the consequent extension of wheel life.

Another means of preventing excessive axle displacement due to accelerating and decelerating impacts is the use of the flat back bearing. This flat back bearing has been used for years in passenger cars equipped with six-wheel trucks having only one brake shoe per wheel and has demonstrated its ability to limit axle displacement, thereby improving bearing, wheel and rear seal performance.

Overall savings from improved lubrication and stabilized bearing assemblies *as outlined in Table III* can be realized in a relatively short period of time. This will have the following beneficial results: 1) operation and maintenance of solid bearing cars will actually cost considerably less than the operation and maintenance of roller bearing cars; and 2) solid bearing cars will continue to enjoy a very considerable advantage in initial cost.

SURER, SAFER, SIMPLER CONTROL

NEW! REDIPAK®

Twin Lubricating Pads

WITH BUILT-IN UNIVERSAL RETAINERS

give

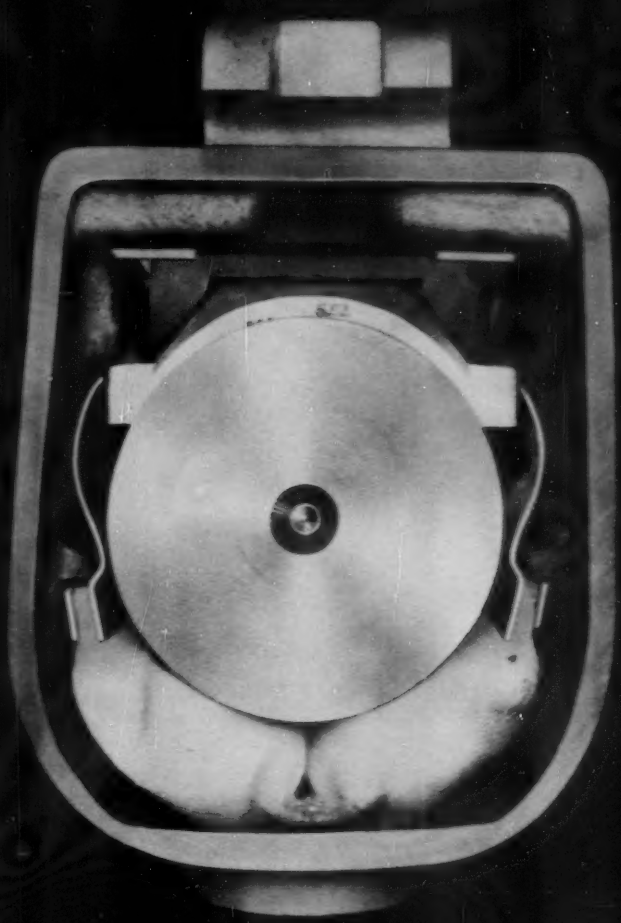
Positive Shift Prevention! Built-in fiber retainers prevent both endwise shift and shift from journal rotation. Pad resilience holds retainers against side of box, away from journal. One universal style for use in boxes with or without retaining ribs.

Far Better Wicking Action! New heavier cotton weave provides superior wicking action and minimizes any tendency of oil-soaked material to adhere to the journal. Cover is woven as a single tube, eliminating all possible seams from the wicking path. The twin design also provides for equalization of the oil level in the journal box through a channel at the center.

Improved Resilience! Twin inserts are made of specially molded foam neoprene, compounded to our specifications. This provides excellent set resistance and oil absorption properties, and is designed for improved resilience.

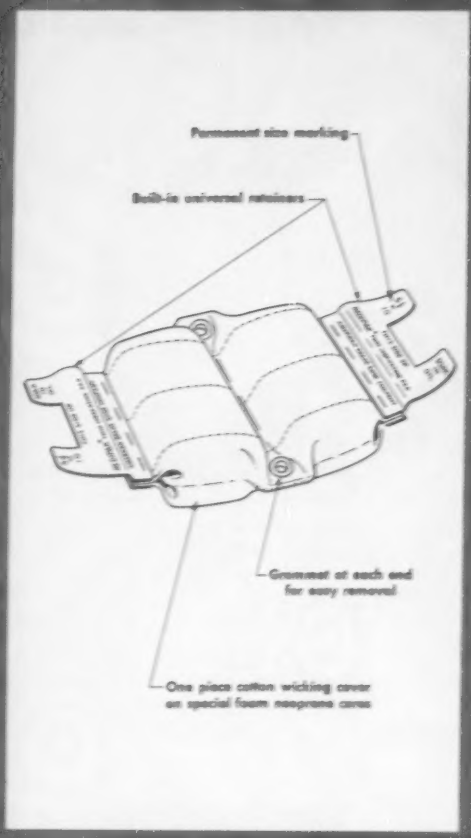
Superior Oil Distribution! New twin design assures improved oil distribution along the entire length of the journal.

OF THE HOT BOX PROBLEM!



For boxes with or without retaining ribs, fiber plates integral with the new Redipak twin pads engage the stop columns, preventing both endwise and rotational shifting.

COMPARE THESE FEATURES OF REDIPAK TWIN PADS


Permanent size marking
Built-in universal retainers
Grommet at each end for easy removal
One piece cotton wicking cover on special foam neoprene core

Here it is . . . the new, improved Redipak twin lubricating pad! This latest triumph of National Bearing research retains the simplicity, economy, and durability of the original model—yet achieves new standards of dependable, all-year-round lubrication!

This new Redipak twin lubricating pad is even easier to install, too. Sturdy fiber retainers keep it securely in position . . . whether or not the box is equipped with retaining ribs.

Try out this new Redipak twin lubricating pad and see how it improves lubrication! Subject to A. A. R. approval.

AMERICAN Brake Shoe COMPANY

NATIONAL BEARING DIVISION

St. Louis 10, Missouri

BRAKE SHOE'S NEW RAILROAD PRODUCTS DIVISION

Combines Resources of Four Great Names for Wider Service to America's Railroads

ON January 1, 1957, a new Railroad Products Division will unite all divisions of American Brake Shoe Company serving the railroad industry. The reorganization will combine production, sales and engineering resources to permit more effective use of talents and production facilities in the interests of American railroads.

Included in the new division will be the railroad product facilities of Brake Shoe & Castings Division, the National Bearing Division, the Ramapo Ajax Division, and the Southern Wheel Division.

New developments in railroading—faster schedules, heavier freight cars, greater use of equipment—have challenged established concepts of design and operation. American Brake Shoe Company, through its well established and enlarged research and engineering facilities, has moved to meet the challenge of changing needs in railroading with new and improved products.

This reorganization will bring under a single leadership the Brake Shoe resources concerned with the railroad industry. It is our belief that this combination of facilities and talents will more fully meet the best interests of America's progressive railroads.

The men who will lead the new Railroad Products Division have served the railroad industry for many years. John S. Hutchins, Executive Vice-President and Director of American Brake Shoe Company, will have over-all responsibility for the new division. Mr. Hutchins was formerly President of both Ramapo and National Bearing Divisions. Stephen S. Conway, a Brake Shoe Vice-President and now President of the Brake Shoe & Castings Division, has been named President of the new Railroad Products Division. Eads Johnson, Jr., now President of Southern Wheel Division, will be Vice-President in charge of sales of the new division. Roy L. Salter, First Vice-President of Southern Wheel Division, will have charge of the production department. Raymond A. Frick, Vice-President of the Brake Shoe & Castings Division, will become assistant Vice-President of Production. The Engineering Department will be headed by Rosser L. Wilson as Vice-President. Mr. Wilson has been Director of Mechanical Engineering at the Mahwah Research Center and Vice-President and Chief Engineer of Brake Shoe & Castings Division. Joseph L. Kepler, Comptroller of Brake Shoe & Castings Division, will head the Accounting Department.

Within the new Railroad Products Division, four staff Product Managers will supervise the lines of products offered by each of the present divisions. Joseph P. Kleinkort, Ramapo Ajax Vice-President, will manage the Racor line of trackwork and specialties. John F. Ducey, Jr., now Vice-President of Brake Shoe & Castings Division, will manage the brake shoe product line. Daniel C. Poor, Southern Wheel District Sales Manager, will manage wheel products. Harry E. Connors, National Bearing General Sales Manager, will manage bearing products.

Three regional sales areas will be established. Sam R. Watkins now Vice-President of Brake Shoe & Castings and Southern Wheel Divisions, has been named head of Eastern Region sales at New York. Ralph L. Robinson, Vice-President of Brake Shoe & Castings and Southern Wheel Divisions, will be in charge of Central Region sales at Chicago. Westley C. Muller, Ramapo Ajax Western Sales Manager, has been placed in charge of Western Region sales at San Francisco.

OLD FRIENDS WITH NEW RESPONSIBILITIES

JOHN S. HUTCHINS, Executive Vice-President
American Brake Shoe Company

STEPHEN S. CONWAY
President of the new Division

EADS JOHNSON, JR.
Vice-President
in charge of Sales

ROY L. SALTER
Vice-President
in charge of Production

RAYMOND A. FRICK
Assistant Vice-President
for Production

ROSSER L. WILSON
Vice-President for Engineering

MANAGERS FOR THE FOUR PRODUCT LINES

JOSEPH P. KLEINKORT
Racor Trackwork

JOHN F. DUCEY, JR.
Brake Shoes

DANIEL C. POOR
Southern Wheels

HARRY E. CONNORS
National Bearing Products

REGIONAL SALES MANAGERS

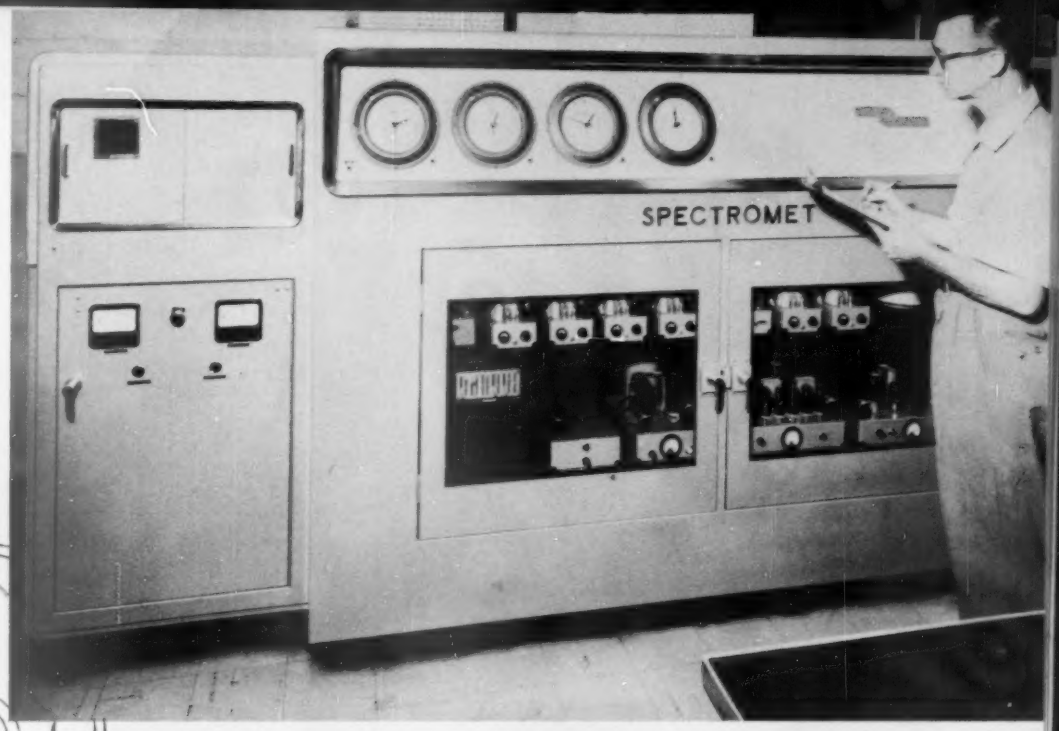
SAM R. WATKINS
Eastern Region

RALPH L. ROBINSON
Central Region

WESTLEY C. MULLER
Western Region

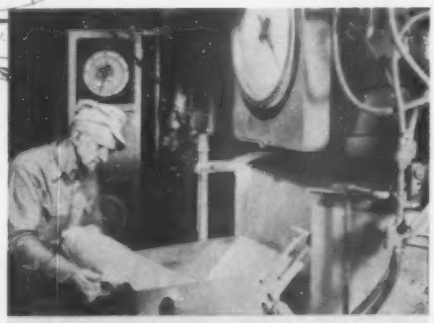
Brake Shoe TON-MILE

The Spectromet direct reading spectrometer, installed in the melting department, gives accurate analysis of the molten steel up to the moment of pouring.



QUALITY CONTROL

Makes Southern® Cast Steel Wheels Dependable



Ingredients of molding sand are metered out in electronically controlled mullers. Below, a sand tester checks the quality and strength of sand used in making hub cores.

Latest production equipment, modern precision instruments, and rigid inspection procedures maintain quality standards that spell top wheel value and long service life.

As everyone familiar with foundry practice knows, significant advances in metallurgy cannot be fully realized unless positive control is exercised over every step in the production process.

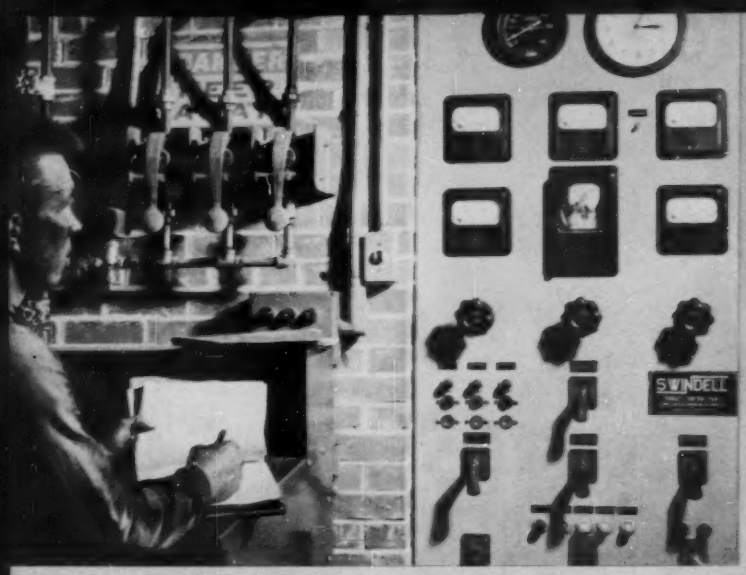
Consider, then, the numerous *quality control* steps that are employed in the manufacture of the new Southern cast steel wheel. Developed and produced for today's and tomorrow's most exacting freight service, this metallurgically unique 1.5% carbon wheel benefits from these and other top quality techniques:

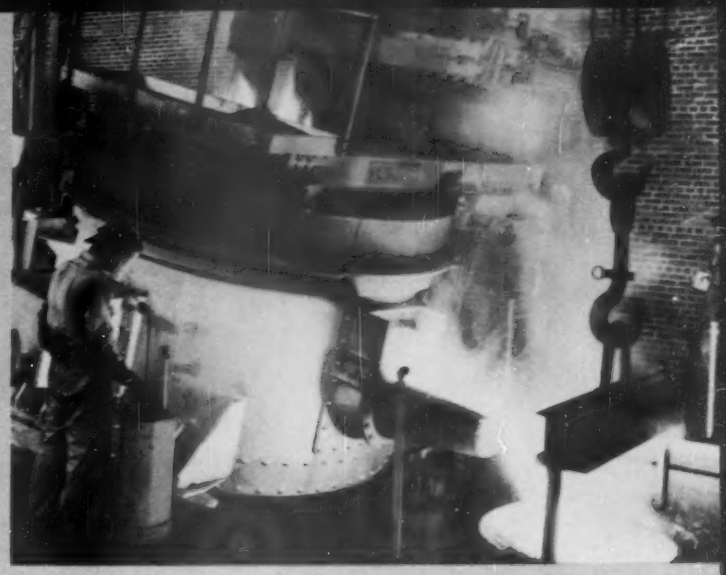
Electronically controlled sand conditioning. Dielectric core ovens. Electric furnace melting with automatic recording pyrometers. Spectrographic analyses of every heat. Double heat-treatment, again automatically controlled. Tensile, hardness, and Magna-Glo tests. Shotblast for easy visual inspection. Automatic control of all machining operations.

No reasonable expenditure has been spared, no corner cut, no compromise made in producing this 1.5% carbon cast steel wheel. The result? Utmost uniformity, both metallurgically and dimensionally. Utmost safety and stamina for severest service. Utmost *value* for your freight car wheel dollar!

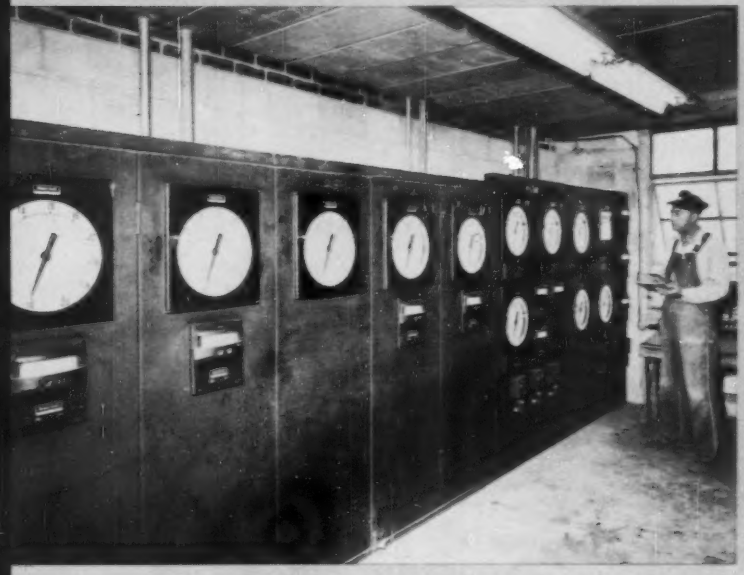
American Brake Shoe Company, Southern Wheel Division, 230 Park Avenue, New York 17, New York.

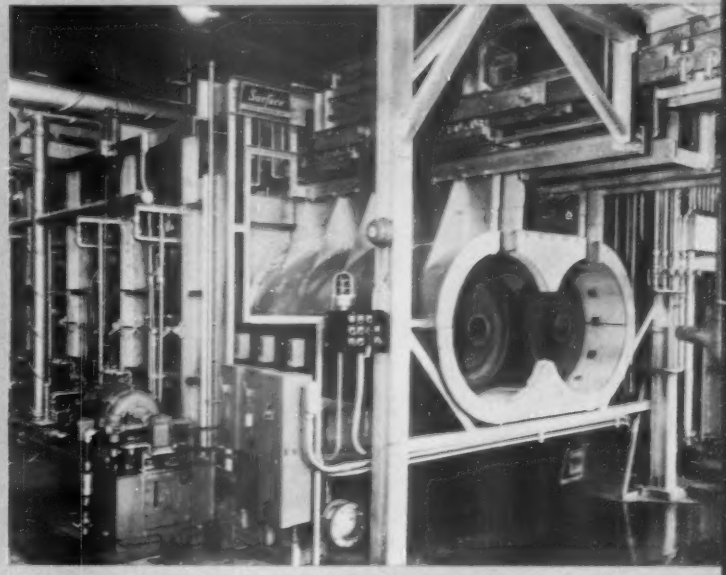
Brake Shoe | TON-MILE





Four electric arc furnaces of the latest type maintain uniformity of steel analysis. Each furnace has a separate power supply and a control panel incorporating some of the most precise sensitive recording instruments.





After being slowly cooled in annealing pits, wheels are subjected to electronically controlled two-stage heat treatment. Below, left, special laboratory equipment gives quick determination of carbon. At right, all finished surfaces are machined at a single chucking on special automatic vertical turret lathes. This produces an inherently true, well balanced wheel of exceptional dimensional accuracy.

DIESELS Demand Rail Lubricators...
...True Economy Demands RACOR!

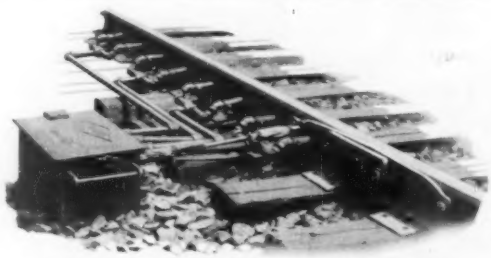
Where should you install rail lubricators?

Experience with diesel motive power shows that high rails of curves wear out faster than with steam – so much faster that savings can be realized by lubricating the outer rails of all curves of two degrees or more. Some authorities even recommend rail lubricators for one-degree curves in high-speed territory.

The effectiveness of rail lubrication in reducing wear on wheels and rails, and in lowering curve resistance, is well established. Well recognized, too, is the superiority of the Racor lubricator in the most severe service.

For the Racor lubricator is simple in design, ample in capacity, and sturdy in construction. So sturdy, in fact, that it can be installed in the curve spiral, where each wheel hugs the high rail and picks up maximum grease around its entire circumference. Its heavy, high-carbon steel delivery plate distributes a long, thin line of grease at exactly the right point to avoid flow onto the top of the rail. Delivery of grease from the simple gear type pumps can be easily controlled by adjusting the height of the plunger.

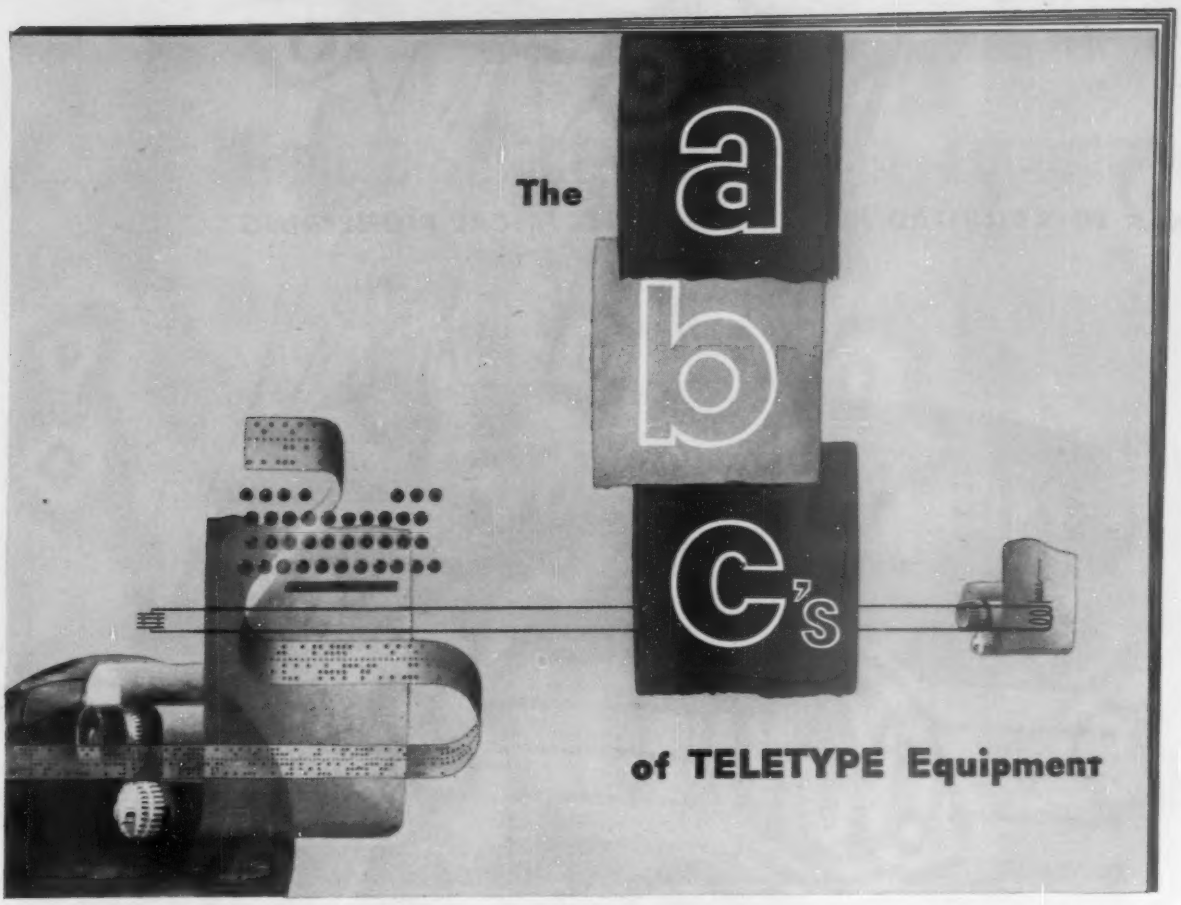
Why not ask your Racor representative for an analysis of the curves in your territory where rail lubrication might be desirable, or where a restudy of existing lubrication would be advisable.



The improved Model 4000-A Racor rail lubricator is designed and built for the longest service with the least maintenance. Its large reservoir holds 250 lbs. of grease.

AMERICAN
Brake Shoe
COMPANY

RAMAPO AJAX DIVISION
CHICAGO 6, ILLINOIS
IN CANADA: DOMINION BRAKE SHOE CO., LTD.



You can still get your free copy of "The ABC's of TELETYPE Equipment"

Because of the many requests we received last spring for *The ABC's of Teletype Equipment*, we're offering it again. If you missed getting your copy, mail the coupon below.

The booklet covers the operation and uses of Page Printers, Perforators, Reperforators, and Transmitter Distributors . . . explains the Baudot code and how code pulses are dispatched over a signal line . . . touches on relaying systems and integrated data processing . . . and cites some of the imaginative ways users apply Teletype apparatus to solve a variety of communication and other problems.

Written in nontechnical language, *The ABC's of Teletype Equipment* is a useful primer on printing telegraphy. If you would like additional copies to pass along to members of your staff, just indicate the number you wish on the coupon. There is no charge, of course.

TELETYPE®
TELETYPE CORPORATION
SUBSIDIARY OF
Western Electric Company

Teletype Corporation, Dept. RA 12
4100 W. Fullerton Avenue
Chicago 39, Illinois

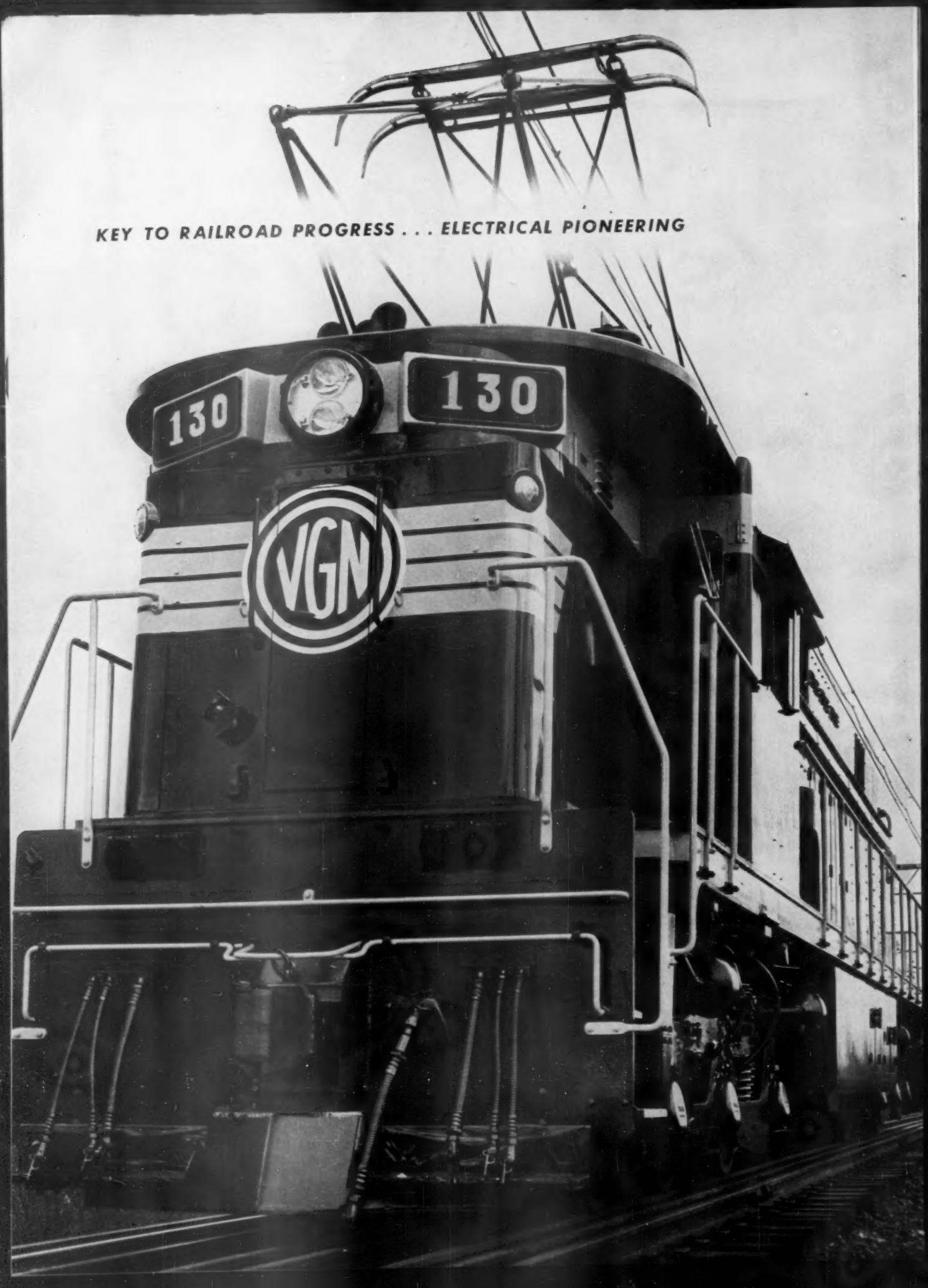
Gentlemen: Kindly send ..... copies of "*The ABC's of TELETYPE Equipment.*"

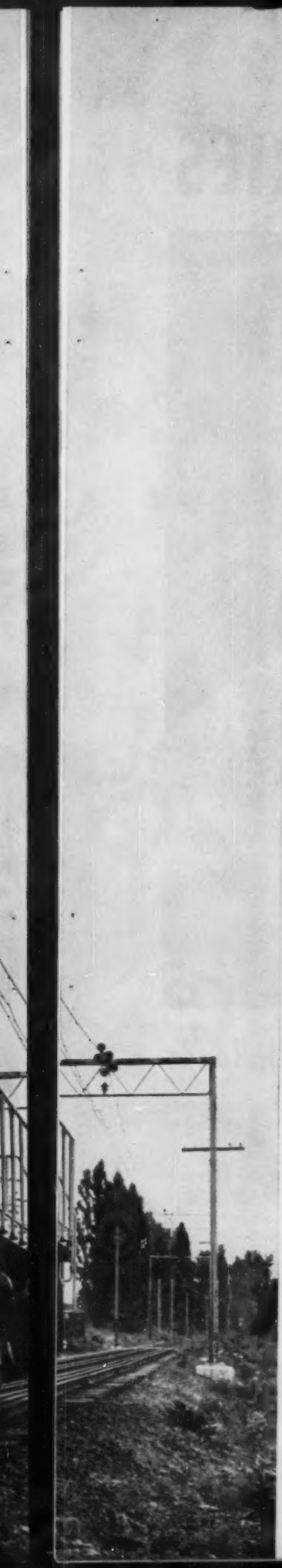
Name _____

Company _____ Title _____

Address _____

City _____ Zone _____ State _____


KEY TO RAILROAD PROGRESS . . . ELECTRICAL PIONEERING
130
130
VGN



Virginian Railway Company Gets New General Electric Rectifier Locomotives Designed Specifically to Move Heavy Tonnage More Economically

Twelve new General Electric rectifier locomotives will soon be operating on the Virginian Railway. These locomotives, the first rectifier-electrics designed specifically for freight service, will develop 3300 hp, and boast a continuous tractive effort that will permit them to haul heavier freight trains economically.

As designed by G-E engineers, electrical equipment in the locomotive will convert high voltage A-C from the overhead wire to low voltage D-C that will drive six G-E-752 traction motors. In combination with the power transformers, rectifier tubes form the heart of the conversion system.

For more information about these new electric locomotives, contact your G-E Apparatus Sales Office, or write Section 135-6, General Electric Company, Locomotive and Car Equipment Dept., Erie, Pa.

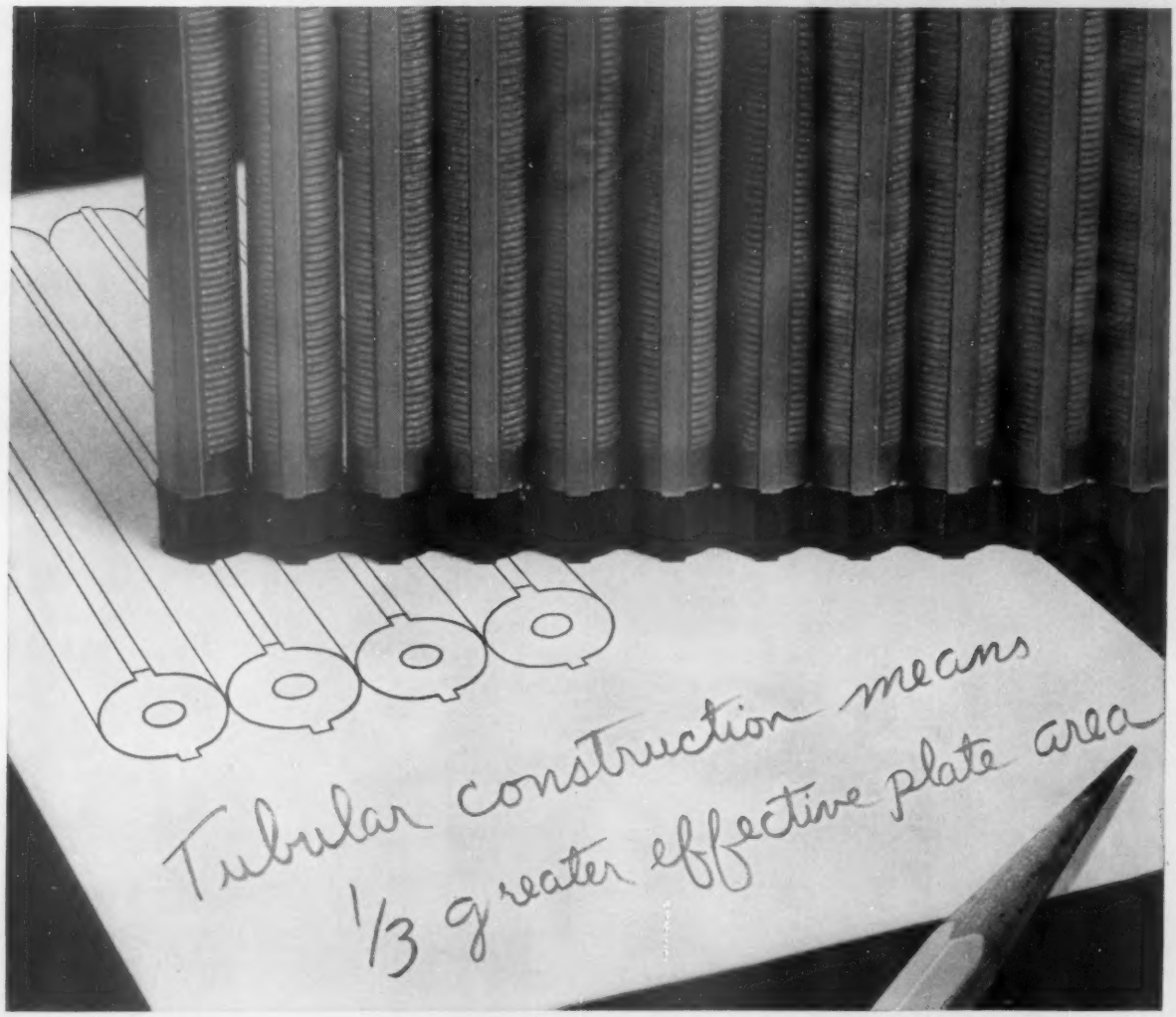
ENGINEERS AND WORKMEN at General Electric's Erie, Pa. Works stand by waiting signal for lowering of locomotive body onto the six-wheel trucks.

NEW VIRGINIAN RECTIFIER LOCOMOTIVE sees the sun for the first time on General Electric's test track. This locomotive will soon be operating between Mullins, W. Va., and Roanoke, Va.

Progress Is Our Most Important Product

GENERAL ELECTRIC

EXIDE-IRONCLAD BATTERIES



Greater effective plate area boosts power for peak loads

BATTERY FOR RAILWAY DIESEL STARTING. Model MV-D. Its tubular construction provides for extra reservoirs of electrolyte adjacent to positive plate. Battery better able to supply sudden heavy power drafts to turn over starting motors. Extra heavy connectors offer minimum resistance to heavy currents. Write for Bulletin 5348.

According to general principles of storage battery engineering, power reserve is governed by positive plate area. In the Exide-Ironclad greater effective plate area is achieved without increasing plate size. Here's how:

In the Exide-Ironclad positive plate, active material is held captive in tubes of slotted polyethylene. These tubes are arranged in a tight row with electrical connections only at the top. The actual surface of the plate is the combined semicircular sides of these tubes—the total surface area being roughly one-third more than the projected dimensions of the plate.

In use, this unique design feature means that more active material is exposed to electrolyte for a given size battery. It means the battery can provide power to spare for peak loads as well as a dependable source of continuous power.

Only Exide-Ironclad Batteries have this advantage. Be sure to specify them when you order—for either new equipment or for replacement. Exide Industrial Division, The Electric Storage Battery Company, Phila. 2, Pa.

Exide®

every day..
every week..

it's Railway Progress through National Research

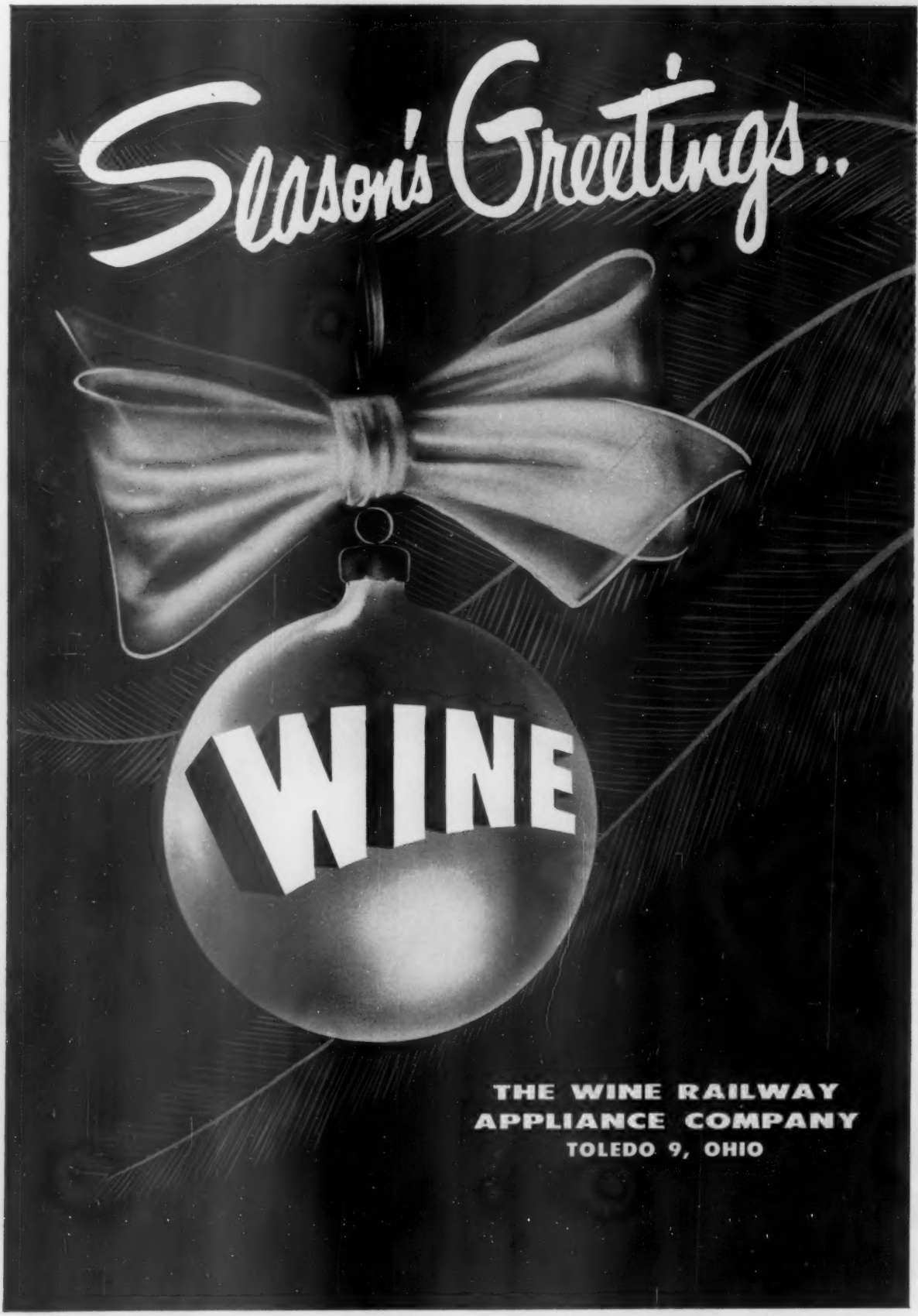
MON
TUES
WED
THUR
FRI
SAT
SUN

NATIONAL MALLEABLE and STEEL **CASTINGS COMPANY**

Established 1868 • Cleveland 6, Ohio

Couplers • Yokes • Draft Gears
Freight Trucks • Snubber Packages
Journal Boxes

A.A.-6150


Season's Greetings..
WINE
THE WINE RAILWAY
APPLIANCE COMPANY
TOLEDO 9, OHIO

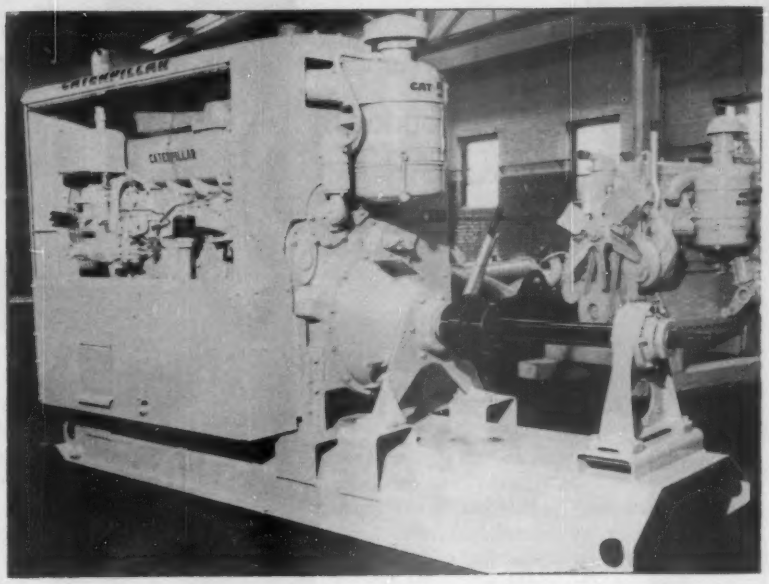
WHAT'S NEWS in Products

Midget Hoist

The Type R Pull-A-Way is a midget hoist which is said to be ideal for moving motors and machinery, opening freight car doors, and stretching and holding tension supports. The device has been tested by hooking it up with a freight car and moving it.

Engineering features of the hoist are similar to larger industrial models—a double interlock prevents the brake from slipping; an automatic notch-per-cycle letdown assures positive control; and a safety handle prevents serious overloading. Its 14-ft single strand aircraft cable will take a

1,500 lb pull; double strand, 3,000 lb. The frame is drop-forged ductile aluminum alloy. Preformed extra flexible wire hoist cable is long enough to give 5½ ft of pull with the double strand. No oiling is necessary throughout. *Wright Hoist Division, Dept. RA, American Chain & Cable Co., York, Pa.* •



"Wrap Around" Engine Bases

A new type of "wrap around" base and fuel tank combination, features greater fuel capacity, lighter weight and sturdier construction. It has been designed for use with all Caterpillar engines and electric sets from the D311 through the D342.

The new bases will replace the steel channels formerly used, the primary advantage being the ability to withstand stresses and strains of skidding and dragging. An additional advantage is the added fuel capacity made available.

Models presently in production include extended and short base versions for D337 (Series F) and D326 (Series F) engines, a short base model for the D318 engine, and electric set bases for D311 and D315 diesel electric sets. *Caterpillar Tractor Company, Dept. RA, Peoria, Ill.* •

Freight Car Insulation

Microlite insulation is available in 120 in. widths for railway refrigerator and freight cars. Previously, it was produced only in widths up to 72 in. Facing materials on the new widths include foil, reflective coated paper, and reinforced or unreinforced paper vapor barriers.

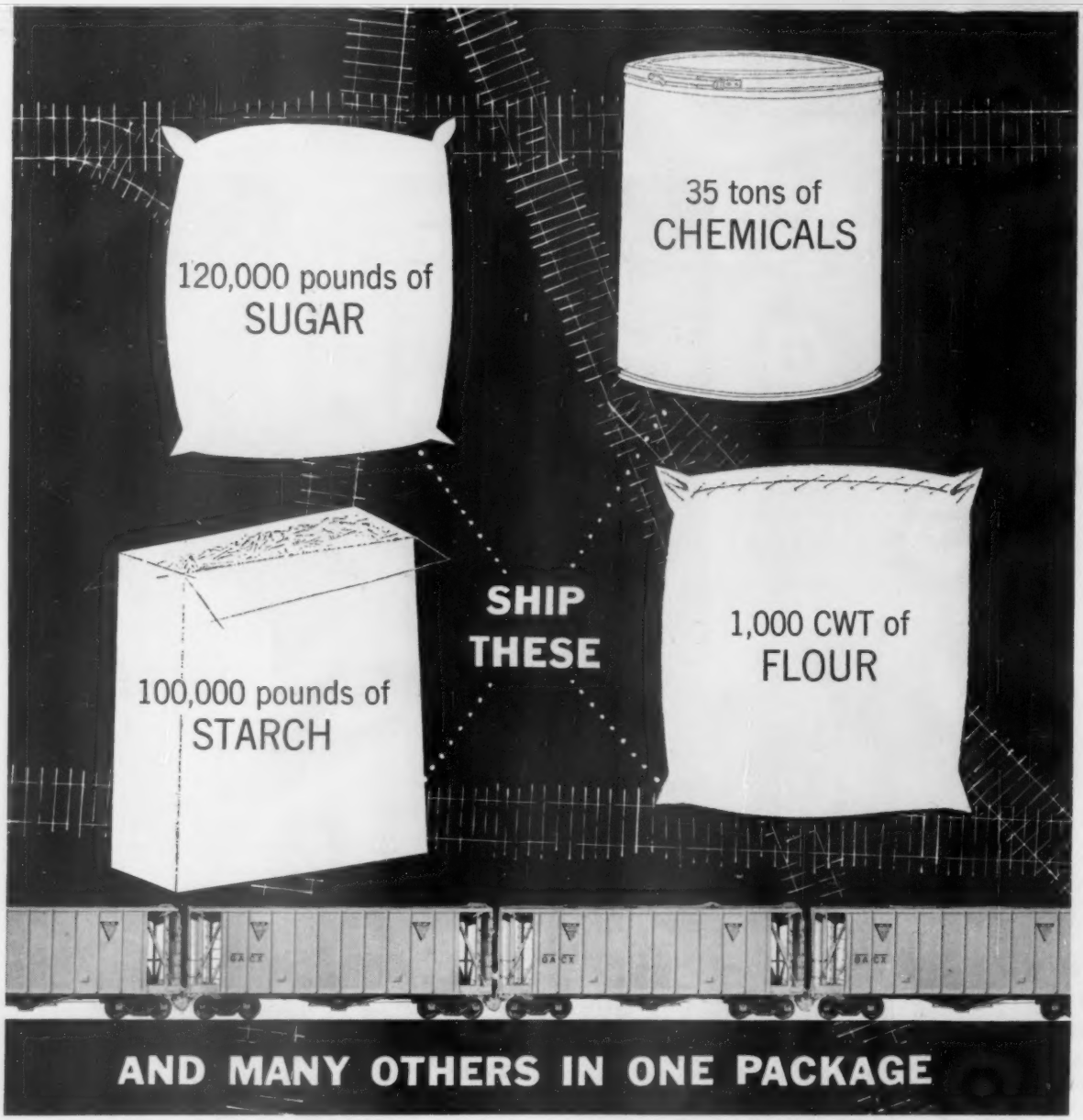
It is said that, when properly installed, the blanket resists any settling that might be caused by constant vibration of rail travel. Fibers in the product are said to be long and uniform, providing an insulation with high tensile strength and uniform insulating properties. The blanket comes in rolls up to 200 ft long, weighing as little as ½ lb per ft.

The Microlite is non-cellular and non-capillary in itself and the glass fibers will not burn nor support combustion. *L. O. F. Glass Fibers Company, Dept. RA, Toledo, Ohio* •

Caboose Electrical System

An a-c/d-c electrical system, designed especially for railway cabooses, has a full output of 165 amp. Power is available for marker lights, two-way radio, and interior lighting, as well as other accessories that may be needed. Typical installations include a gear drive, manufactured in different drive ratios to meet various requirements, and a belt drive, which permits the drive ratio to be varied by altering the pulley sizes. The generator can also be adapted to various other types of drive mechanisms.

The system is available as a complete package—a c generator with mounting bracket, two selenium rectifiers, a carbon pile regulator and relay rectifier. *Delco-Remy Division, General Motors Corporation, Dept. RA, Anderson, Ind.* •

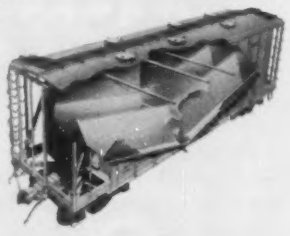


Save! Ship in Bulk via Airslide® Cars

The Airslide Car is designed and built for materials never before successfully shipped in conventional covered hopper cars. The Airslide Car has been proved by more than 3 years of continuous use in all climatic conditions all over the country.

Over 2000 Airslide Cars are now in use or on order. They require no re-spotting, provide far more clearance for unloading and can be unloaded into any conveying system as fast as the system permits. If such requirements are important to you, write today for full information about General American's new Airslide Car.

CLEAN INTERIOR DESIGN—*All-welded construction—no interior carlines or other protuberances. Provides maximum sanitation and minimum product retention. All loading hatches and discharge outlets provide a hermetic seal.*



AIRSLIDE GENERAL AMERICAN TRADE MARK

GENERAL AMERICAN TRANSPORTATION CORPORATION

135 South La Salle Street • Chicago 90, Illinois • Service Offices In Principal Cities • Service Plants Throughout The Country

Where Progress Really Comes Hard

There is an enormous difference between the degree of progress to be found in some areas of railroading—and the relative retardation and disagreement which prevails in other areas.

For example, the railroads' severest critics could certainly find no fault with the alacrity the industry showed in adopting the diesel locomotive. Or centralized train control. Or "automation" in yards. Or mechanization of roadway maintenance. Wherever improvements are available that one railroad can adopt without the necessity of consulting with other railroads, these improvements get speedy acceptance and application.

The areas wherein railroad action tends to be laggard are usually those in which effective decisions cannot be made by one railroad alone. No other industry requires cooperative agreement to the degree that railroads do. Montgomery Ward and Sears Roebuck could carry on their businesses without ever having any contact with each other. Each has its own arrangements with its unions. The two companies are under no compulsion to exchange merchandise with each other—nor does one company have to have the assistance of the other in filling its customers' orders.

But all this is different on the railroads. The railroads have to interchange equipment—hence certain uniform mechanical standards must be established and maintained. And rental payments for cars of one railroad on the lines of another must be agreed upon. No one railroad can assure an adequate supply of cars for its own customers, merely by its own action.

And so on down the line—pricing practices, industry policy toward regulators and legislators, interchange practices, accounting, labor relations. No other industry has so many vital decisions which can be arrived at only by inter-company cooperation.

How the Railroads Are Unique

So, when it is pointed out that the place where the railroad industry usually moves slowest is in the areas where inter-company agreement is necessary, that observation carries no built-in criticism with it. If any other industry—steel, automobiles, chemicals, oil, electric utilitites or what have you—were required to get inter-company cooperation on as many vital questions as the railroads are, their difficulties in these areas would probably be no less than those of the railroads.

It is doubtful whether most railroad men, themselves, fully recognize how unique their industry is in its dependence on inter-company cooperation. If they appreciated their quite unparalleled difficulties in this respect, they would be less despondent and self-critical, than they are at times, at their slow progress in solving all these problems. They would recognize their greater need for patience and tact in their dealings with each other, far in excess of the quota required from the leaders of any other industry. They would recognize that the railroads need far more skill in negotiation and communication—and far more mature arrangements for cooperative action—than any industry, anywhere, has so far developed.

No individual company management can, accurately, say to itself: "Our problem is, first, to run our own railroad; and after that to spend such time as we can spare on industry-wide problems."

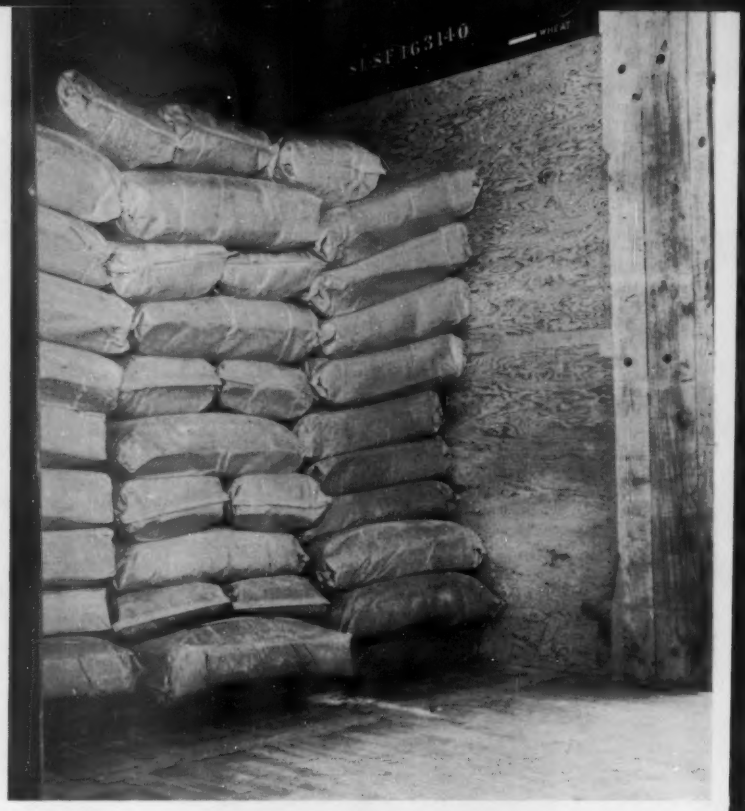
On the contrary, it is delay in reaching solutions to industry-wide problems that constitutes the chief deterrent to the prosperity of individual companies. Most of the problems that individual managements can resolve, acting alone, are being handled swiftly and profitably.

Associations' Job

Moreover, it is neither just nor realistic to expect the full-time officers and employees of the various railroad associations to find all the answers to the problems where joint action is necessary. The association people are, after all, the executors of policy—their authority as policy-makers is usually quite limited. If industry policy regarding public relations, or legislation, or labor relations, or rates, or car supply, or accounting is not as far advanced as the best informed brains in each of these specialized areas could wish—who is at fault? Who now has the authority to make industry policy, and take industry action on these questions as prompt, as well-informed, and as profitable—as individual company action has been in dealing with innovations in motive power and signaling?

Legislative bodies—such as Congress—have a parallel problem to contend with, i.e., that of getting agreement among a large number of individuals on questions that require a great deal of specialized knowledge. So legislative action is largely entrusted to specialized committees whose members make themselves as expert as they can on the questions referred to them.

If questions of industry policy in public relations, or legislative objectives, or car supply were, more intensively than at present, entrusted to relatively small committees of the best informed people in the railroad industry on such questions, isn't it likely that progress in solving some of these problems would be considerably advanced? There are certainly brains enough on the railroads to solve these inter-company problems. Isn't it largely a question of developing the best possible arrangements for getting the problems and brains together—and of not, so often, subordinating industry problems to those of the individual companies?



SMOOTH SURFACE is ideal for special uses like moving bagged foodstuffs on the Frisco.

Because it's

Easy to handle,

Economical to use,

Rugged and adaptable . . .

Plywood Gets Nod on 'Special' Jobs

The popularity achieved by plywood in railroad equipment construction and upgrading work has been won largely because of its adaptability for many varied uses, its easy-to-handle qualities, and its durability. While it has not met with universal acceptance, plywood is in use on some 50,000 freight cars on at least 25 American railroads.

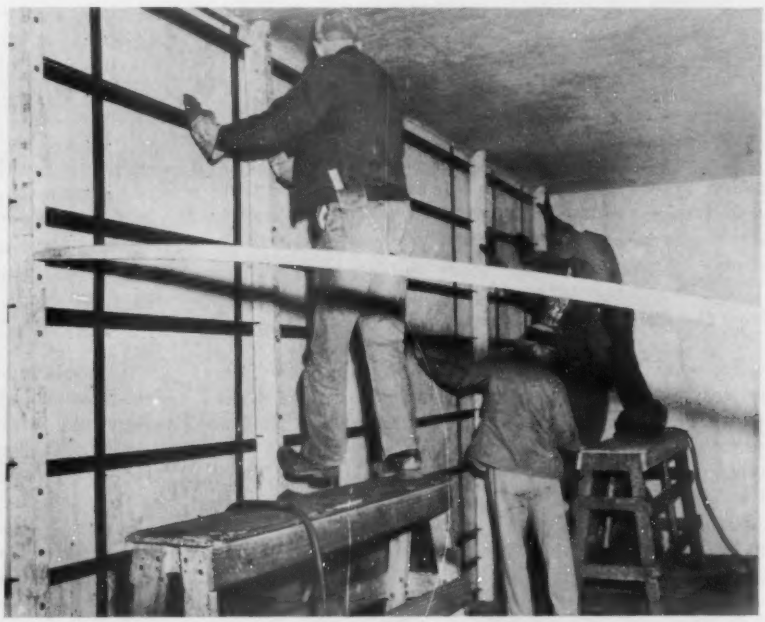
Initial cost of plywood as compared with tongue-and-groove lumber for inside lining or outside sheathing is not a governing factor in its acceptance or rejection. Whatever the cost margin is of plywood over other lumber, it is largely offset by savings in labor costs.

Among the roads making extensive use of plywood are the Frisco, Baltimore & Ohio, Missouri Pacific, Texas & Pacific, Great Northern, Denver & Rio Grande Western, and Southern.

Some Drawbacks

Its current principal uses in rolling stock are for box car lining and relining, refrigerator car lining, freight car sheathing renewal, caboose and camp car rehabilitation, and passenger car interiors.

Plywood characteristics that might be considered advantages in some applications are reported to be troublesome in railroad useage. Among the problems confronted is that of the failure of plywood to "close up" when nails are removed. In freight car linings, this leaves holes in the surface through which bulk commodities are apt to leak out of the



INSULATED BOX CAR with Evans DF loaders gets plywood lining as protection against sweating or freezing on the Texas & Pacific.

MORALE BOOSTER in Baltimore & Ohio's renovated cabooses, plywood also simplifies maintenance.

"COOKIE BOX" on Rio Grande for moving baked goods has plywood sides and ceiling, Plastinail floor.

car or through which moisture can seep into the car.

In one group of 1,000 cars a few years ago, plywood side linings had to be replaced because of such nail holes. Use of back-up strips labeled "Nail Here" failed to prevent nails being driven where there was nothing behind the plywood. After a few trips in which nails were used to secure lading, enough holes had been driven to leave the cars unsuitable for bulk loading.

Another reported weakness of plywood is its tendency to buckle from dampness. Remedies available — heavier sheets and support posts— are effective but costly. Still another drawback is a relative lack of resistance to damage from lift truck bumps and scrapes which are often withstood by standard lumber. Plywood reportedly chips off a layer at a time under hard knocks from loading vehicles.

Some Remedies

Last year, the Southern received delivery of an order of cars with ¾-in. plywood side and end linings. Nail-hole difficulties were virtually overcome through installation of strap

EASY HANDLING plywood cuts labor costs, offsets high initial price, on Missouri Pacific (above) and other roads.

SPRAY COAT of moisture repellant is applied to plywood interiors of rehabilitated Great Northern box cars.

PLYWOOD IS USED IN MANY WAYS IN PASSENGER CARS, TOO . . .

DOME FLOORING in full length lounge cars made by Budd Company for Santa Fe are plywood, shown here during installation.

LONG PANELS, as used here in Canadian Pacific sleeper built by Budd, also lend selves to coated interior panels, some ceiling work.

anchors and slots. Protection against lift truck damage is attained by a neoprene-coated, four-foot high steel plate running all about the car. The upper portion of the lining is screwed to horizontal furring strips which eliminate nailing and simplify removal of sections that may be damaged.

The obvious advantages of plywood—its highly desirable smooth surface; the fewer joints required which reduces danger of infestation; and, for outside sheathing, its better wearing qualities and ability to retain an acceptable appearance longer—are enhanced greatly by its labor saving and adaptability for special uses. One eastern line reports that it can reline five cars with plywood in the same time two can be relined with ordinary lumber, by applying the plywood right over worn-out interiors.

Plywood for remodeled caboose interiors was found by the Baltimore & Ohio to improve appearance and crew morale while reducing heat loss and the cost of upkeep. In connection with maintenance, it has been found by some roads that small damaged sections of plywood surfaces are easily repaired by use of new plastic upgrading materials.

Plastic coatings could also be used, it is felt, to prevent damage to plywood (as well as standard lumber) linings, by application to surfaces before the cars are put into service.

Some Innovations

The Union Pacific has used such plastic coatings on conventionally lined cars having fair to good interiors to prolong their life rather than wait until repairs are needed.

The Great Northern, which surveyed the relative wearing qualities of standard and plywood-sheathed cars, has used the material extensively in a general repair program on older cars. The GN has also used plywood in new car construction—especially when steel was not easily available—and reports that horizontal application of the plywood sheathing is superior in several respects to vertical sheets.

The Frisco last year upgraded 235 wooden box cars by applying steel sides and plywood side lining, readying the cars to handle commodities like flour in sacks, powdered milk, rice and beans. The Rio Grande's "cookie box" cars are also plywood-lined and insulated for moving bakery goods.

Insulation is also used with plywood lining on 20 Texas & Pacific cars assigned to food transportation. Features of these cars include air-tight refrigerator-type doors, DF lading protection gear and aluminum paint throughout interiors.

Heavy plywood installations—¾ inch for side lining and 1 inch for ends—are used by the Missouri Pacific in new box cars to protect them from heavy abuse in general service.

SPEAKER enables switchman (left) to talk with yardmaster or engineer. Retarders and automatic switching (right) expedite classification.

Radio Speeds Up Small Yard

To provide better service to shippers in the Cincinnati area, the Chesapeake & Ohio has made several improvements in its facilities.

EARLY in the program a centralized checking system with loudspeaker communications was installed in the Cincinnati freighthouse.

NEXT came modernization of Stevens, Ky., yard—rebuilding it from a manually operated hump yard to a gravity-type classification yard with automatic switching and retarders.

ANOTHER part of the yard improvements included installation of talk-back and paging loudspeakers, and a radio and paging loudspeaker communications system for car inspection work.

FINAL phase was to install two-way radio equipment on 30 locomotives and 35 cabooses which operate in the area. To work with these units, four base radio stations were also installed.

Cars from the Cincinnati terminal area are made up into trains at the Chesapeake & Ohio's Stevens classification yard. These trains are for points east as well as north to Chicago. Cars from Cincinnati industries and transfer cuts from other railroads arrive at Stevens throughout the day and night. Approximately 1,000 outbound cars are handled each 24 hours, with a peak of 500 arriving between 4 and 8 p.m.

Formerly these cars could not all be readily dispatched before midnight. Now, however, with the new modern retarder yard operation, all cars arriving at this yard by 9 p.m. are made up into trains and sent out before midnight. This assures morning delivery at Huntington and Charleston, W. Va., and second morning delivery at Richmond and Newport News.

Radio the Coordinator

Yard radio is employed to obtain more effective coordination of switch runs, transfer moves and industry switching activities in and around Cincinnati. The C&O serves approximately 250 industries in the Cincinnati area, including Covington and Newport, Ky., and interchange is carried on with the seven other railroads which serve the area. To obtain solid radio coverage the four base stations are strategically located with respect to concentration of switching moves, transfer cuts, interchange and industries. They are at the Stevens yard office, KC interlocking tower, MD interlocking tower and Cheviot yard office.

The yard engines are equipped with Sperry radio including footboard speakers, one at each end of the locomotive on the handrail over the footboard. This speaker reproduces all calls received by the locomotive radio. By pressing a knee switch, the crew foreman can talk via locomotive radio to the yardmas-

ter. He may also press another knee switch, which enables him to talk to the engineer via an "intercom" circuit, his voice not being broadcast by the radio. A separate radio "net" includes the yardmaster hump conductor and three hump engines.

Cabooses Have Packsets

Cars for Cincinnati area industries and interchange often arrive at Stevens yard in blocks of 30 or more. The crews that handle these cuts, in effect, have a 30- or 40-car freight train when they leave Stevens for Cincinnati. To provide two-way communication between the yardmaster and the conductor or switch crew foreman in the caboose, a portable Bendix radio packset is given to the conductor when he is to go out on such a run.

Each caboose is fitted with a rack to hold the radio packset with plug connections to an antenna and dry battery power supply. With the packset "plugged in" to the battery supply and external antenna, the range of the set is increased. Radio calls are reproduced over a loudspeaker on the cupola wall.

To answer, the conductor simply picks up the walkie-talkie handset and presses the push-button in the handle.

Voice communications at Stevens yard are centered in the yardmaster's top floor tower office, where talk-back and paging speaker circuits, yard radio and telephone lines terminate on his communication console. The yard tower is opposite the master retarder, and from his office the yardmaster commands a view of the receiving yard and the classification yard.

Placement of Speakers

Talk-backs are mounted back-to-back in pairs on pipe masts along the ladder tracks in the classification yard and along switching leads in

HOW 'DICK TRACY' RADIOS HELP CAR INSPECTORS

Car inspectors on all railroads have one problem in common—how to talk to each other and to the foreman when separated by several tracks of standing cars, or when at opposite ends of a string of cars.

To save time walking "all over the lot" to find the foreman, as well as let each other know promptly when to set out flags, for example, the C&O installed a radio-paging speaker communications system in Stevens yard. Here's how it works:

Each car inspector carries a Handie-Micro-Talkie (Dick Tracy radio transmitter) when he is out inspecting cars. When two inspectors are to set out blue flags at the ends of a string of cars, one man presses the press-to-talk button on his Handie-Talkie and says "Jim, I'm ready to put out my flag. How about you?"

CAR INSPECTOR gives "bad order" information to his foreman by talking into portable radio transmitter.

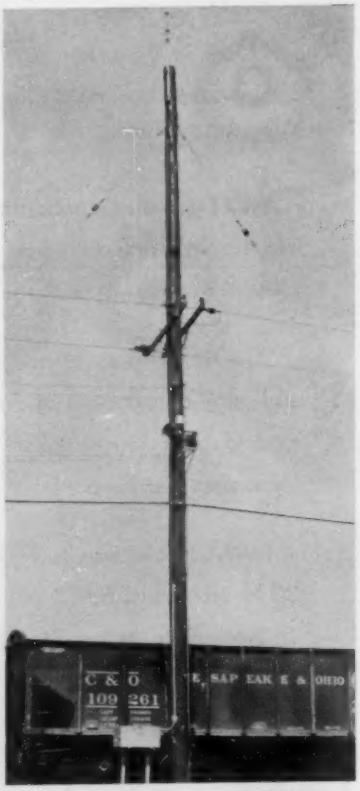
Nabbing Bad Order Cars

This conversation is picked up by one of four radio receiving stations and put out on the paging speakers.

Jim, at the other end of the cars, hears the call, and answers, using his Handie-Talkie: "O.K. Bill, I've just put out my flag." Hearing this, Bill replies that he has his flag out, so both men then go to work.

If one of the inspectors finds a bad order car, he uses his Dick Tracy to tell the foreman. If the foreman is out in the yard, he hears the call over the pagers, and he can answer over his portable radio transmitter. If he is in his office, he hears the call over a monitor speaker. And to answer he uses a microphone connected to the paging speaker system.

Estimates are that the use of this radio-paging speaker system saves 10 to 15 min in getting a train ready for departure, or inbound cars ready for humping.



RADIO RECEIVING ANTENNA atop pole "picks up" waves to reproduce car inspector's voice on the paging speakers (mounted on pole just above cable).

the receiving and departure yards. Where clearances are restricted in the receiving yard, the talk-back speakers are in rectangular weatherproof housings on low concrete pedestals adjacent to the hand-throw switch stands. A foot treadle is operated to signal the yardmaster. Paging speakers are mounted on floodlight towers or wood poles, generally about 40 ft above ground. Talk-back and paging speaker system equipment was furnished by Electronic Communication Equipment Company.

How Retarders Are Used

As part of the Stevens improvement, the old flat switching yard was reconstructed into a new gravity yard with 15 classification tracks. Only four Union electropneumatic retarders are required: one for the track scale; one master; and two group retarders. They are controlled by a retarder operator in his third floor tower office at the crest of the hump.

The Union retarder control panel also contains the automatic switching controls which can store as many as five routes simultaneously. To control the retarders, the operator merely presses buttons designating the speed at which he desires to have a car or cut of cars leave the retarder—4, 6, 8, 10 or 12 mph. For this particular operation, the master retarder control is normally set for 6 mph and the group retarders for 4 mph.

A one-rail retarder is in approach to the beam scale so that single cars can be properly slowed so as to pass over the scale at 2 mph. Normally this scale is open, being manually controlled by the retarder operator for weigh cars.

Blowers Clear Snow

Considerable snow falls in this yard, it being in a river valley. To keep switches free of drifting and falling snow, Racor snow blowers have been installed on all classification track switches.

These blowers use compressed air, which is blown out of nozzles mounted on the gage side of the stock rail along its web. The snow blowers are controlled by a toggle lever on the retarder control machine panel.

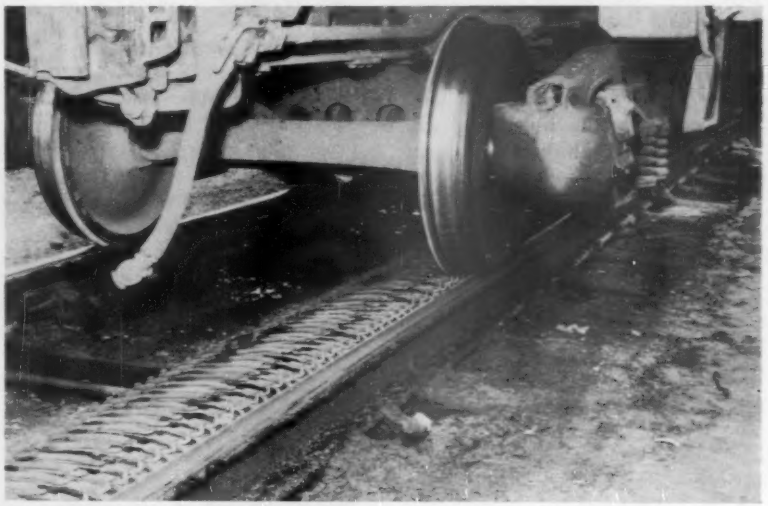
FOUR RADIO STATIONS provide solid "voice coverage" for switching crews working in the Cincinnati terminal area.

BROKEN WHEELS DETECTOR

Two Gieskieng "Wheel Checkers," one for each rail, are placed at the crest of the Stevens yard hump to detect broken wheels. When one of the "fingers" of the detector fails to be depressed properly, because there is a break in the tread or flange of a wheel, the detector actuates an alarm system.

A bell then rings in the yardmaster's office and a red warning detector lamp is lighted on his communications console. The retarder operator also has a detector warning lamp on his control machine.

Identification of the car having the broken wheel is fairly easy because the pin puller uncouples the cuts just before they pass over the wheel checkers. Upon hearing the detectors' warning bell, the yardmaster looks up to see the car or cut leaving the detector, and then calls the car inspector foreman to tell him the car numbers and classification track so that he can inspect them.



FINGERS DETECT BROKEN WHEELS as cars are pushed toward crest of hump.

What's Happening to

SHAKE-UP. The track-maintenance forces on many roads are undergoing a quiet revolution. The basic reason is higher wages, which have triggered the development of more and better machines. Trouble is, many roads have found themselves with basic track-force organizations established when most operations were performed with hand tools.

WHAT'S NEEDED. To get maximum economy from machines it is considered necessary to take operations formerly done by section gangs and place them in the hands of larger, mechanized crews. There seems to be general agreement on this point, but not such close agreement on how to do it.

HOW IT'S DONE. Some lines are reducing the size of the section gangs or lengthening their territories, or both, and establishing floating or "district" gangs with the men thus made available. Others are going much further, even to the extent of practically eliminating the old-style section gang.

The track foreman and his two-man gang climbed on their motor-car at 7 a.m. and set out for the day's work. When they returned to their tool house about 3 p.m., they had patrolled about 35 miles of track, stopping here and there to do a minor repair job. On the way they passed an eight-man floating gang lining a curve. The two-man gang, and two others like it, together with the eight-man gang, are the total regular force on a roadmaster's district consisting of about 120 miles of main track.

The same morning on another road a foreman and his gang of nine men left their trailer quarters, got into a truck and drove about five miles to pick up where they had left off the day before, unloading ballast ahead of a system tie-renewal and surfacing gang. The nine-man gang and four others like it comprise practically the entire regular track-maintenance force on a division consisting of nearly 600 miles of main track. There are no section crews and all heavy out-of-face work on the track is done by highly mechanized system gangs.

These are examples of what's happening to the track forces. Maybe they're not typical, but at least they are indicative of a trend. It would be difficult to find a road on which the track-maintenance organization is the same as it was five years ago. At one extreme are those lines, relatively few in number, that have completely reorganized their track forces. At the other end of the scale are roads that, in a manner of speaking, have been satisfied to nibble at the problem, putting changes into effect on a piecemeal basis.

This situation carries two implications. One is that there are wide differences of opinion among track men regarding the extent to which the track forces should be reorganized. The other is that, on many roads anyway, the track forces are still in a state of evolution, with the prospect that they will continue in this state for some years to come.

Different Conditions Today

There are sound and urgent reasons why these changes are taking place in the track forces. Their purpose is merely this: To get optimum efficiency in maintenance under the conditions that exist today. The problem arises for the simple reason that the conditions having a bearing on costs have undergone marked changes in recent years.

The basic factor, of course, is the higher wage rates that prevail today, up to $2.00 or more per hour for track labor. The problem is to use this higher-priced labor more effectively. Machinery is at least a partial answer but its effective use requires that work formerly done by local forces, such as tie renewals, be placed in the hands of system or regional gangs operating on a cyclical basis.

But the overall problem isn't as simple as this. There are many jobs that can't be handled this way. Also, provision has to be made for patrolling the track at frequent intervals, and there's a need for having local forces available to handle emergencies such as washouts and snow storms.

Track men as a rule agree that some redeployment of the track forces is indicated, but they frequently disagree on the manner and extent of the redeployment.

Among the railroads that have reorganized their track forces on a comprehensive basis is the Frisco. Before the reorganization was started the railroad had slightly more than 600 section gangs and a varying number of extra gangs to do the heavy work. The first step toward the reorganization of the track forces was taken in October 1947 when a so-called district gang was established at Olathe, Kan. Simultaneously four out of nine section gangs between Rosedale, Kan., and Paola were eliminated. The purpose of the district gang was to handle the heavier out-of-face jobs, while the remaining section gangs, whose territories had been extended, continued to do the lighter and minor jobs.

At first the idea was that the district gang would supplement the

(Continued on page 46)

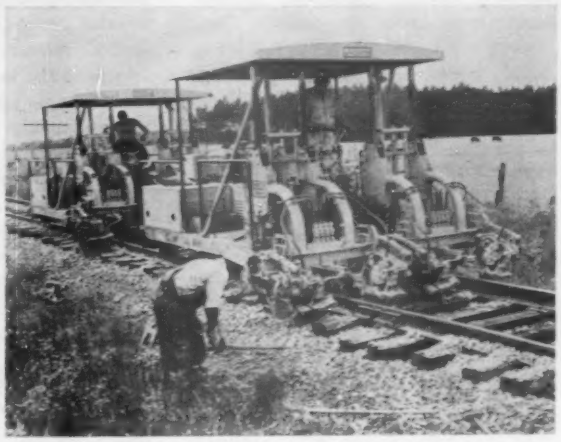
the Track Forces?

OLD TIES are taken out and new ones put in by two RMC TieMasters. Ties removed are loaded on carts.

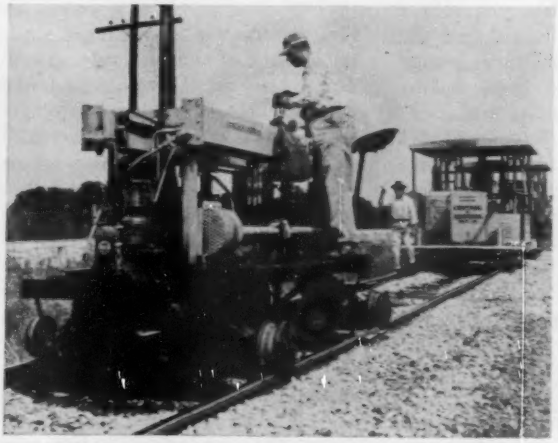
SPIKES are driven in new ties by an RMC SpikeMaster. This machine has magnetic spike setter.

Machines Spark Reorganization Of CofGa Track Forces

Three highly mechanized gangs have been organized on the Central of Georgia to handle major tie-renewal and track-surfacing work. These gangs are important factors behind a complete reorganization of the road's track forces. Major items of equipment used by them are shown here.



TAMPING work is done by two Jackson Track Maintainers. Jacks are transported by Matisa self-propelled carrier.



TRACK is lined by Nordberg Trakliner. Assistant foreman in background is giving signals to machine operator.

BALLAST distribution and track dressing is done by two Kershaw Ballast Regulators.

road began to give thought to the possibility of eliminating all section gangs on a roadmaster's territory and establishing district gangs, each including a small unit to do the patrolling. This concept was first put into effect July 1, 1950, on a single track division. It was then progressively broadened until about the middle of 1954, by which time the number of section gangs had been reduced to 20 and the number of district gangs had been increased to 110.

As established at that time, each of the district gangs had a foreman and an assistant foreman. The latter, with two men, constituted a patrol unit which, equipped with a light inspection-type motor car, patrolled the territory, performing odd jobs or so-called "rabbit" work.

In August 1955 another development occurred on the Frisco that resulted in further far-reaching changes in the track-force organization. This development was the creation of a highly mechanized gang for inserting ties and surfacing track out of face. The results with the new gang were so satisfactory that the railroad established four additional gangs of the same type about January 1, 1956. This made it possible to bring about a substantial reduction in the number of district gangs.

Following these changes the railroad had this set up: 47 district gangs and 5 mechanized gangs, plus 136 so-called section gangs. The latter gangs were created from the patrol units in the old district gangs. The former assistant foreman, now with the title of section foreman, with no increase in pay, usually with two men working under him, handles patrolling, emergency and odd jobs. These so-called section gangs, with a maximum of 62 miles of main track to patrol, only faintly resemble the old-style section gangs.

The district gangs, of which there is usually one in each roadmaster's territory, do heavy work, such as lining and surfacing curves, that is not on the planned schedule of the mechanized gangs. They also do tie-renewal and surfacing work on back tracks, the building of industry tracks and similar jobs. They may be housed in camp cars or they may operate out of a central point using trucks or motor cars.

The mechanized tie and surfacing gangs are housed in outfit cars. As explained by E. L. Anderson, chief engineer of the Frisco, their schedules are set up so that work may be performed on southern territories during winter months and on the northern territory during the summer. Still another gang handles rail relay work for the entire system.

Says Mr. Anderson: "Experience with this organization necessarily has been of short duration but it has the promise of fulfilling all of our expectations." However, he visualizes the present organization as only an intermediate step.

No Section Gangs on CofGa

The Central of Georgia is another road that has made revolutionary changes in its track forces. Previously, this road had a typical section and extra gang setup. As on the Frisco, creation of highly mechanized tie-renewal and surfacing gangs triggered the overall changes.

According to W. E. Chapman, superintendent maintenance of the CofGa, there will be three such gangs which "will timber and surface all main tracks, passing tracks, and yard tracks every four to five years, and will put them in such condition that they will require only spot smoothing during the intervening time." These gangs are housed in conventional camp cars.

Supporting these out-of-face gangs, and carrying on what Mr. Chapman refers to as "housekeeping maintenance" during the interim between surfacings, are flexible maintenance gangs. Each such gang consists of a foreman and eight laborers, plus a cook, and they are housed in highway trailers for flexibility in getting about their territory. There will be 14 of these gangs on the road.

The 3 mechanized tie-renewal and surfacing gangs, the 14 flexible gangs and a system rail gang will comprise the total track-maintenance force on this road except for the use of laborers, called "yardmen," assigned to strategic points, where daily attention is needed for switches, gaging and similar duties.

There are no section gangs in the new organization.

Who does the patrolling and taking care of the odd jobs? Mr. Chapman explains it this way: "Each supervisor's district, a distance of 75 to 200 miles, depending on traffic, will have a supervisor and an assistant supervisor and each will have a laborer who will move over the district with them. These laborers will do any small jobs that are found to be needed as they go over the track.

"The assistant supervisor must inspect his entire district every two days, and the supervisor also inspects track on such days that he is available for such work. Each supervisor and assistant supervisor carries with him such tools as the laborer will need for the small corrective jobs."

What are the advantages of the new organization? "This organization," explained Mr. Chapman, "has increased efficiency and produced economy in our maintenance work by reducing the unit cost of all types of maintenance jobs, and by giving us a better all-around grade of track. Estimated savings are better than 40 per cent a year on the investment, and our experience so far indicates that the savings will be considerably in excess of this figure."

Four Organizations on C&O

On the Chesapeake & Ohio the track-maintenance organization on a given territory is tailored to its particular needs. Explaining why one type of maintenance-of-way organization could not be adopted for the entire system, H. W. Kellogg, assistant chief engineer maintenance and construction, said: "We have single-track main lines carrying 50 million gross tons per year. We have multiple-track, high-speed, heavy-traffic lines. We have secondary lines and we have branch lines with trains that operate once or twice a week. We also traverse the mountainous country of the East and the level and rolling country of the Middlewest and in many places we are subject to heavy snowfall in the winter months."

To satisfy the diverse maintenance requirements and other conditions prevailing on its lines, the C&O has settled on four general types of organizations:

1. On the multiple-track main lines, the sections average in length between 10 and 20 miles of road or 20 to 40 miles of main track. The section gangs on these lines each consist of a foreman and four to six men. The out-of-face maintenance work is done by extra forces consist-

ing of a foreman, an assistant foreman and 25 to 35 laborers. These men do all of the out-of-face work, including tie installations. There is usually one such force on each supervisor's district. Production tampers are used for surfacing.

2. On single-track, high-speed main lines with medium traffic, the sections are 36 to 40 miles long. A typical section gang here consists of a first-grade foreman, a second-grade foreman and 18 to 22 laborers. No extra forces are employed for maintenance work on these sections; the regular section forces do all of the work, including out-of-face surfacing and tie installations.

3. On the road's secondary lines in the North, the sections run about 20 miles in length. On each section there is a foreman and six laborers. There are no extra forces on these lines, all work being performed by the section gangs.

4. On its light-traffic branch lines, the C&O has eliminated section forces completely with the exception of a patrol force consisting of a foreman and two men who cover approximately 60 miles of railroad. This has been made possible, explains Mr. Kellogg, by a policy of laying such branch lines with 131-lb or 112-lb rail, renewing all ties where necessary, and ballasting with good washed gravel or crushed limestone ballast. Before these lines were rehabilitated, says Mr. Kellogg, "we had a foreman and two men for approximately 10 miles of railroad."

Floating Gangs

A further evolution is now taking place in the C&O's track maintenance organization. The practice has now been adopted of installing ties independently and ahead of surfacing work. The surfacing force follows behind the tie-installing force after a day or so. The surfacing gang is comprised of 18 to 20 laborers, using two production tampers in tandem, a ballast regulator and a power track liner.

This system was started two years ago, according to Mr. Kellogg, and in 1957 the road plans to continue extending it to other divisions.

A number of roads have adopted what might be called a modified section-gang setup, that is, the sections are lengthened or the gangs reduced in size, or both, and the manpower thus made available is incorporated in floating gangs.

One middlewestern road that has followed this practice formerly had four or five men in each section gang, plus the foreman. These sections have now been lengthened, and one or two men have been shifted from each section gang into floating gangs of 12 or 14 men. Their function is to handle the heavier seasonal jobs, such as out-of-face tie renewals. The section gangs confine their activities to policing, spot work and odd jobs.

Each floating gang may operate over several roadmasters' territories, but the force assignment is such that each roadmaster has one for at least part of the working season.

Railroading

After Hours

by James G. Lyne

Editor, Railway Age

Slow Freight

In answer to my question of why it should take 6 days to move a car of freight 200 miles, B&O Vice-President Murray Campbell asks me one: Why does a young boy have a stomach ache?"

He goes on to say that lots of boys don't have them; and that the only true answer to my question depends on the circumstances of each case. Investigation of cases of slow car movement will usually find a better reason than carelessness or lack of systematic handling.

Recruiting Engineers

We hear a good deal today about the activity of industries in recruiting likely college boys to go to work for them. There's really nothing new in this effort—the railroads have been at it a long time.

For instance, at the RPI dinner the other night I ran into Joe Holmes, president of National Aluminate—whom I had seen only once before since we were in college together at Lawrence, Kan., back in ancient times. Holmes was one of a number of chemistry students recruited for railroad water service work by R. C. Bardwell, at that time head of water service for the Missouri Pacific.

I remember seeing how Bardwell operated in his recruiting, back in my school days. He knew the principal chemistry profs, and a great many of the students. He didn't just meet them formally, but got a line on them personally—exactly according to the procedure now practiced by personnel specialists, who have made a profession of recruiting. It's a formula that produces results.

The "Good" Old Days

In 1863 in Oxford, England, an engineer and fireman were fined for having been found drunk in the engine cab. At their court hearing, they testified (and they were not contradicted) that their regular working day was 14 hours; and that, because of overtime duty, they'd had only 17 hours' sleep during the preceding week.

Conditions were not a whole lot better almost 30 years later—in 1891 a signalman testified that he worked a week of 6 days of 14 hours each, with no meal breaks, and was on his feet practically all of the time.

These instances are reported in an article on British railway history in the September issue of the Business History Review; and U. S. cases could be found to parallel them. There's nothing quite so eloquent in gaging the status of the working man today, as looking back a little way into history, to see what the job was like a couple of generations ago. Or only one generation ago, for that matter.

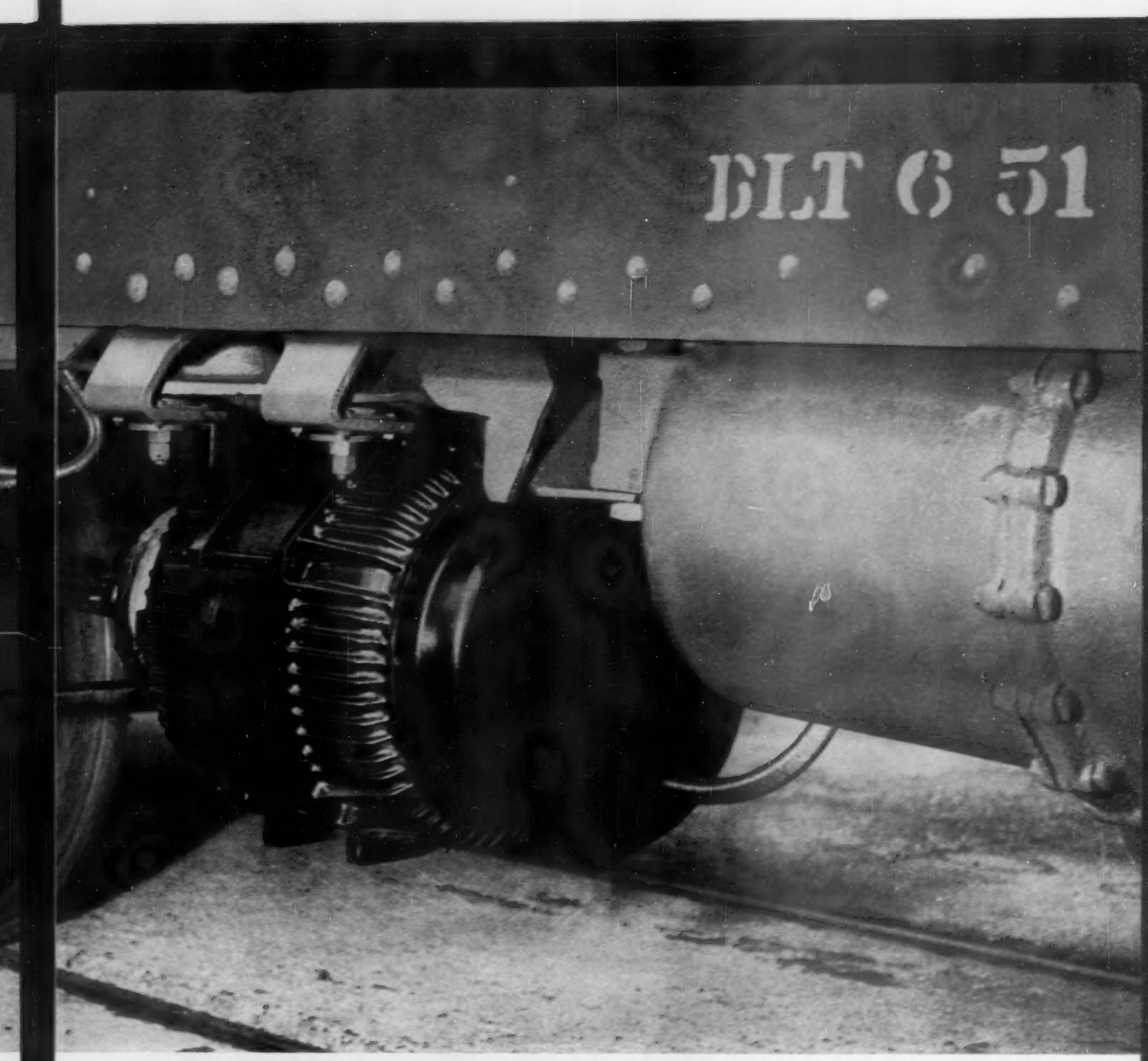
Big Lettering

The Erie's George C. Frank (prompted by retired Chairman R. E. Woodruff) writes me on the subject of what railroad was first with the big lettering on freight cars. The Erie, says GCF, established the practice of putting its big diamond on box cars "way back in 1945."

GENERAL ELECTRIC'S AXLE-DRIVEN PRODUCE ALL THE POWER

A wise, long term investment, the high capacity G-E Power Supply pictured above for cabin and head-end cars is a sure cure for generator obsolescence due to increasing electrical demands.

For more information, contact your G-E Apparatus Sales Office or write for Bulletin GEA-5865A. General Electric Company, Locomotive and Car Equipment Department, Erie, Pa. 125-33

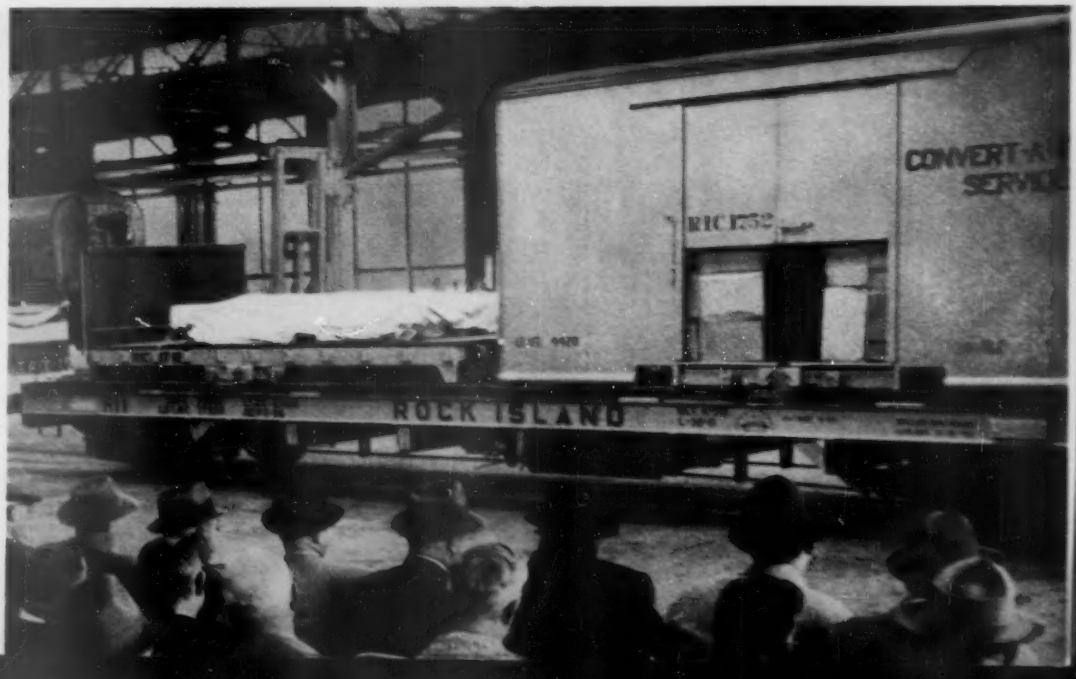


ALTERNATOR-RECTIFIER SYSTEMS YOUR CABIN CARS CAN USE

Progress Is Our Most Important Product

GENERAL ELECTRIC

SPEED AND FLEXIBILITY: fork lift truck places closed box unit on the **ACF** ADAPTO flat car in just a few minutes.



VERSATILE: In demonstration before railroad and shipping executives, flat-bed pallet for steel and closed box unit occupy same **ACF** ADAPTO car.

Rock Island introduces the acf ADAPTO

in "CONVERT-A-FRATE" Service

Now the Rock Island Lines is introducing "Convert-A-Frate" cars into regular service, bringing acf Adapto convenience, speed and economy to freight shippers of midwestern America!

Shown to 400 top executives in a "freight service spectacular" at Chicago were the basic acf Adapto flat cars and eight revolutionary, lightweight, demountable cargo units including closed box units, gondolas, covered hoppers, flatbed pallets, a new concept in refrigerator units, and automobile carriers.

Hailed by D. B. Jenks, President of the Rock Island Lines, as a basic, revolutionary advance in railroad freight speed and flexibility, "Convert-A-Frate" service permits door-to-door shipping by transferring cargo units from flatcars to flatbed trucks. Dramatic demonstrations showed the ease of moving cargo units by lift truck or crane, requiring only a few minutes.

Now in full production, acf Adapto equipment offers economies and convenience never before approached by conventional freight cars. For full information, specifications, design details, and availability, write, wire, or phone your nearest acf sales office.

D. B. Jenks, President of the Rock Island Lines, calls "Convert-A-Frate" the "answer to piggyback".

Prominent railroad men and shippers talked enthusiastically about possibilities of this new concept.

Railroad and industrial executives witness dynamic demonstrations of new service.

What prominent Shippers say about CONVERT-A-FRATE SERVICE

"It is a pleasure for me to advise that recent movement of steel in your new 'Convert-A-Frate' cars was a complete success."

THE COLEMAN COMPANY, INC.,
C. G. Dolloff, Freight Traffic Manager

"I feel that this new method will prove very advantageous to most concerns."

THE O. A. SUTTON CORPORATION,
C. H. Van Loon, Manager Shipping and Receiving

"...satisfactory from every angle of transportation, leaving nothing to be desired."

DEERE & COMPANY,
H. A. Stephens, General Traffic Manager

"We have, on the basis of our experience, requested that our supplier ship steel in this manner when such equipment is available to them."

THE GEORGE EVANS CORPORATION,
Fred Perry, Purchasing Agent

acf *sets the pace in railroad equipment*

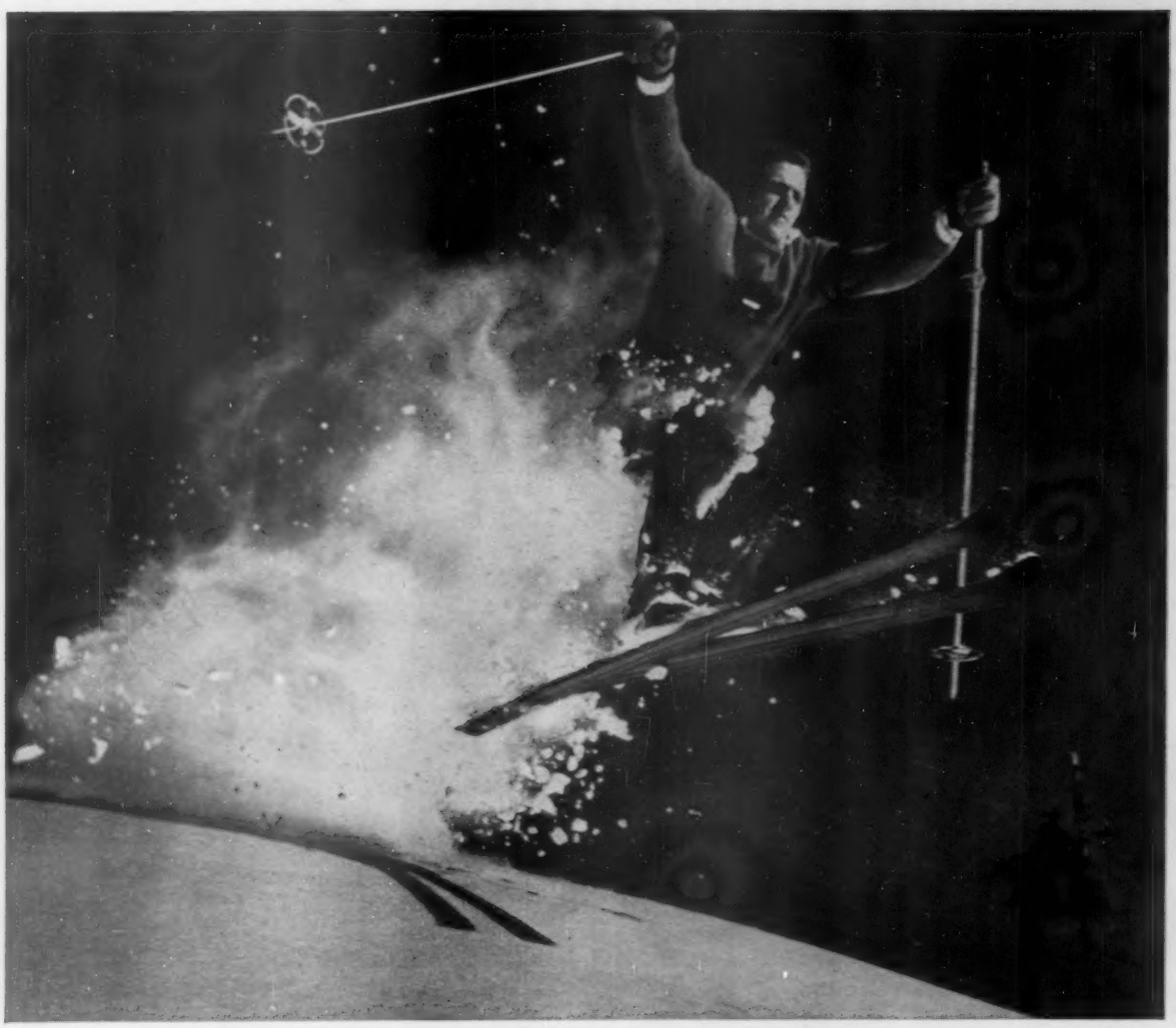
AMERICAN CAR AND FOUNDRY

Division of acf Industries, Incorporated

30 Church Street, New York 8, N. Y.

Sales Offices: New York • Chicago • St. Louis • Cleveland • Washington, D. C. • Philadelphia • San Francisco.

Plants: Berwick, Pa. • Huntington, W. Va. • Milton, Pa. • St. Charles, Mo. • St. Louis, Mo.



LEAP ... but not before you look at Gould's "extra-value" features:

America's Finest!
GOULD
KATHANODE BATTERIES
for Diesel Starting

More Aggressive Research Program
More Application Engineering Help
More and Better Battery Performance

You'll agree, the leap to Gould smooths out all battery problems. Be sure to specify Gould. Gould-National Batteries, Inc., Trenton 7, N.J.

Always Use Gould-National Automobile and Truck Batteries

gould
BATTERIES
More Power to you from Gould

©1956 Gould-National Batteries, Inc.

For Greatest Underframe Strength

250 now building or on order for the St. Louis-San Francisco Railway

Maximum Capacity

Maximum Revenue

New FRISCO

70-Ton Pulpwood Cars Have Commonwealth One-piece Underframes and Interlocking Upright Bulkheads

Again Frisco specifies Commonwealth Underframes for greater payload . . . more round trips per month . . . lowest upkeep costs and maximum revenue. The larger capacity of these well designed 70-ton cars—approximately 30 cords—is made possible by the greater strength at less weight of Commonwealth one-piece cast steel Underframes and interlocking bulkheads.

What's more, corrosion is no problem, and these cars provide longer life, continuous availability with Underframes that are *maintenance-free.* If you aren't realizing the profitable investment Commonwealth Underframes offer, it will pay to investigate now.

GENERAL STEEL CASTINGS

GRANITE CITY, ILL. EDDYSTONE, PA.

GEARED TO PROGRESS P R I MEMBER

New in 1945...

NEW AGAIN in 1956...with

Diesel Conversion by L. B. Smith, Inc.

This giant 250 ton Western Maryland self-propelled Bucyrus-Erie wrecking crane was recently converted in our shops from steam to Diesel power. Remodelling included the installation of a General Motors Diesel with Allison torque converter, Westinghouse air controls with compressor and Twin Disc air reversing clutches. The cab was moved from back to front for maximum visibility by the operator. Identical controls with which the operator was familiar were arranged in their same previous location.

This big Dieselization job is one of some 50 cranes modernized by our personnel, specialists in this type of Diesel conversion.

If you are considering a modernization program, it will pay you to investigate our know-how and facilities.

For complete information, phone or write:

L. B. SMITH, INC.

CAMP HILL, PENNSYLVANIA

Telephone (Harrisburg) RE 7-3431

SPERRY RAIL SERVICE CUSTOMERS SPEAK FOR THEMSELVES!

SPERRY RAIL TESTING HELPS SAFEGUARD AMERICA'S MOST TRAVELED TRACKS

"Our aim is to provide the fastest, safest railroad service possible for our freight and passenger customers. We insure safety by emphasizing soundness of rail, and we do so at low cost per mile of track with Sperry Rail Service."

Mr. B. V. Bodie
Chief Engineer
Gulf, Mobile & Ohio Railroad

"Sperry Rail Service plays a very important part in our operation . . . Each defective rail is a potential accident; its detection and removal eliminate that hazard."

Mr. R. J. Gammie
Chief Engineer
Texas & Pacific Railway Company

"Sperry's testing effectiveness is shown by the fact that during . . . spring testing, 87% of the defects found were small size (under 20%) . . . This is valuable protection against delays to our heavy, high-speed trains."

Mr. B. Blowers
Chief Engineer
Erie Railroad Company

"Constantly heavier loads and high speeds place an increasing burden on the rails, and track safety is more important today than ever before . . . The best defense is to test often enough to locate defects while small."

Mr. W. C. Perkins
Chief Engineer
Union Pacific Railroad

"A segment of track may look good and ride well, yet when Sperry reports a defect, we quickly relegate that rail to a yard or track restricted to light tonnage and low speed."

Mr. F. L. Etchison
Chief Engineer
Western Maryland Railway Company

"Our unique traffic pattern requires that much of our rail inspection be done at night during off-peak hours. The close cooperation and efficiency of Sperry . . . make such unusual inspection possible and provide us with vital information concerning the condition of our rail."

Mr. Frank Aikman, Jr.
Chief Engineer
Long Island Rail Road

"Thorough rail testing is vital and so is smooth scheduling of our high-density traffic during testing periods. We've combined both and cut chargeable time for Detector Car operation by 70% through close cooperation with Sperry Rail Service personnel."

Mr. A. B. Stone
Chief Engineer
Norfolk & Western Railway

"We consider Sperry Rail Service testing as vital to economical maintenance as it is important to operating safety."

Mr. E. L. Anderson
Chief Engineer
St. Louis-San Francisco Railway

"Detecting and replacing defective rails is of prime importance. That's why we have used Sperry Rail Service to test Missouri Pacific rail in track since 1931."

Mr. A. B. Chaney
Engineer
Maintenance of Way
Missouri Pacific Lines

"The vast industrial growth of Canada places an ever-increasing responsibility on the nation's railroads. I feel that Sperry testing has helped us keep pace . . ."

Mr. A. V. Johnston
Chief Engineer
Canadian National Railways

"Sperry Rail Service has played an important part in building up the outstanding safety record achieved by Atlantic Coast Line in recent years."

Mr. R. L. Groover
Chief Engineer
Atlantic Coast Line

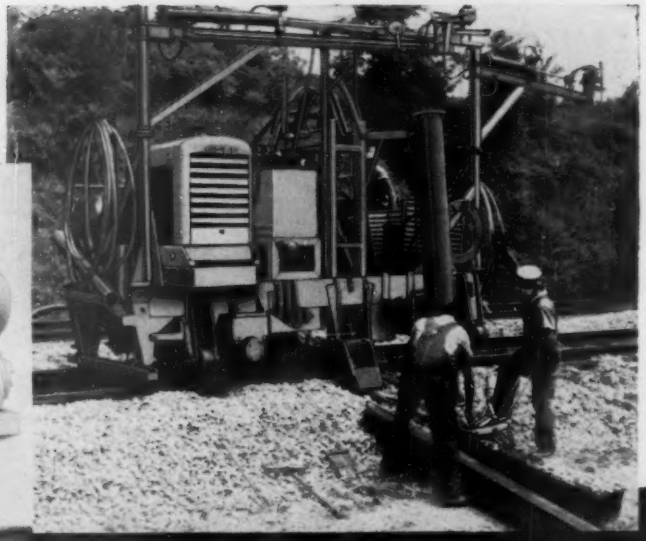
"Close cooperation between Sperry crews and division personnel make scheduling and operation of the Detector Car over our high-density track smooth and efficient."

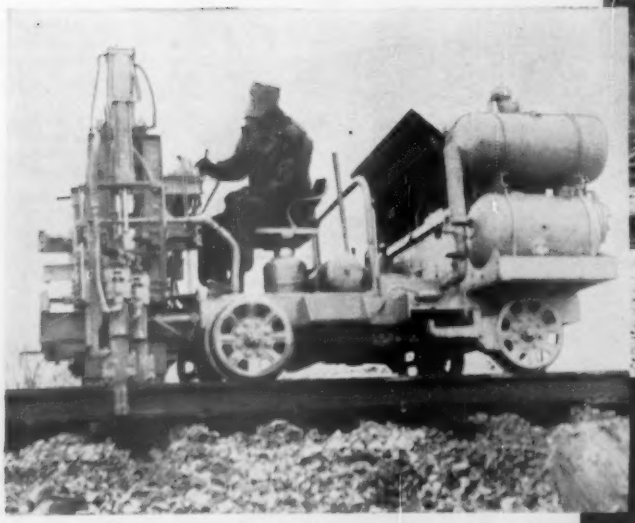
Mr. S. R. Hursh
Chief Engineer
The Pennsylvania Railroad

These railroad officials are responsible for the condition of thousands of miles of track across the nation. Each has found that Sperry Rail Service gives high track safety at low cost.

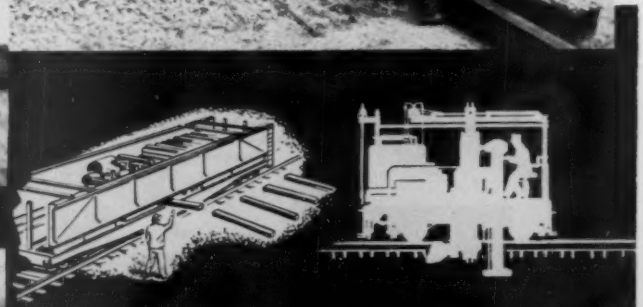
SPERRY RAIL SERVICE
Division of Sperry Products, Inc.
Danbury, Connecticut

R.M.C. TIEMASTER replaces ties at a rate of one per minute, with minimum disturbance to the bed.





R.M.C. SPIKEMASTER spikes ties tightly against the rails, operating at better than six ties per minute.



1. R.M.C. Tie Unloader unloads ties one at a time to the exact spot desired.

2. R.M.C. TieMaster removing old ties and inserting new ones.

McWILLIAMS BALLAST DISTRIBUTOR places ballast in desired quantity and depth in exactly the proper position for tamping.

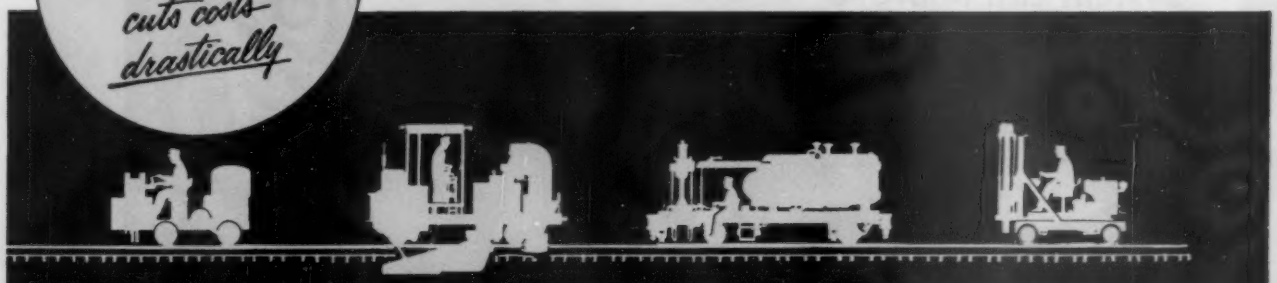
McWILLIAMS TIE TAMPER finish tamps any raise up to 6" at speeds up to 720 feet per hour.

R.M.C. LINEMASTER lines over 1,000 to 2,000 feet of track per hour, using an operator and one man sighting. Produced in rail and crawler-mounted types.

Savings are SPECTACULAR!

with the right combination of Mechanized Maintenance Machines

This mechanized maintenance gang *cuts costs drastically*



3. R.M.C. SpikeMaster nipping up the ties and driving four spikes.

4. McWilliams Ballast Distributor placing ballast in perfect position for tamping.

5. McWilliams Tie Tamper with split head using controlled pressure to compact ballast under the ties.

6. R.M.C. LineMaster aligning the track by moving it horizontally in either direction.

R.M.C. TIE UNLOADER unloads ties one at a time from a modified flat car, placing them in the exact spot desired for the renewal operations. Speed: a car of 400 ties in 45 minutes.

Our experiences with Mechanized Track Maintenance Gangs show that the substantial cost savings offered by modern equipment can be multiplied . . . when machines are used in the right combination.

May we discuss this important new phase of mechanized track maintenance with you?

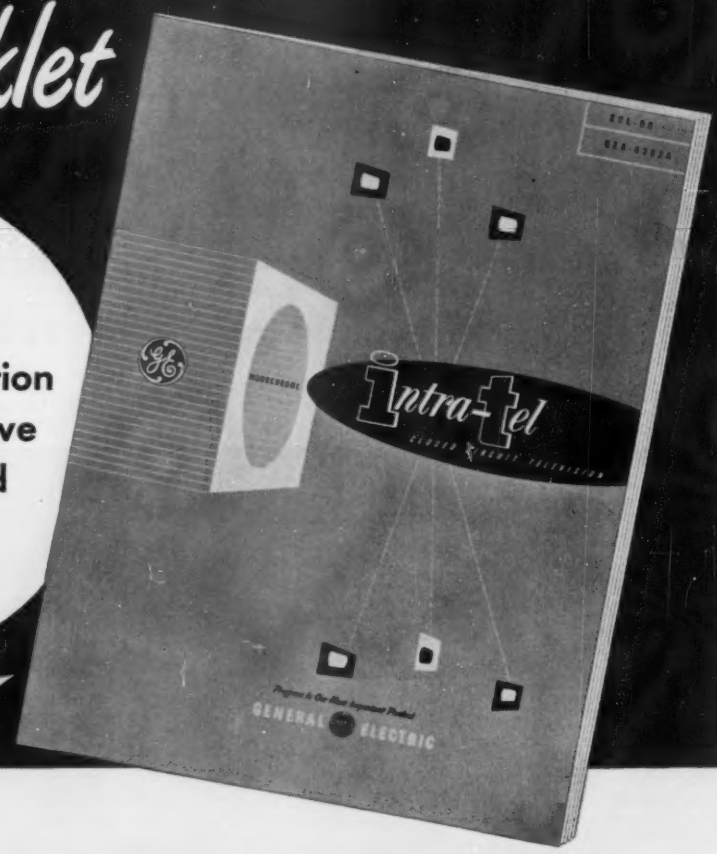
Railway Maintenance Corporation

PITTSBURGH 30, PA.

PIONEER IN MECHANIZED TRACK MAINTENANCE

Free booklet

Tells how
new low cost
Visual Communication
System can improve
your control and
productivity



INTRA-TEL NEW GENERAL ELECTRIC CLOSED CIRCUIT TV

AVAILABLE NOW IN BLACK AND WHITE OR IN COLOR!

FOR modern management, instantaneous *visual communication* is a vital tool that pays its way in better control and increased productivity.

With the General Electric INTRA-TEL Closed Circuit Television System, you enjoy the full advantages of constant or immediate *visual* contact at new low cost. In most applications where distance, hazards, dust, and other limiting factors are present, you can *see* any number of remote locations at will, in black and white, or in color, as your needs require.

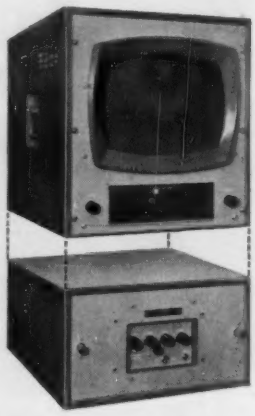
General Electric's new booklet—INTRA-TEL CLOSED CIRCUIT TELEVISION, is just off the press. Ask for a free copy, on your letterhead, please. It tells how easily you can have dependable General Electric INTRA-TEL TV working for you. The booklet answers your questions...contains scores of applications. Don't delay—write for your copy today. Please mention Booklet ECL-53 for black and white, or ECL-39A for color. *Industrial Electronics Division, Broadcast Equipment, Section X85126-3, General Electric Company, Syracuse, New York.*

The basic system is housed in three small, compact units...easy to place, easy to move!

The CAMERA
Type TG-2-A. Takes the picture of subject, scene, or action.

The MONITOR
Type TH-6-A. Shows the picture as taken by the camera. Conventional home-style TV receivers may be used as additional receivers or monitors.

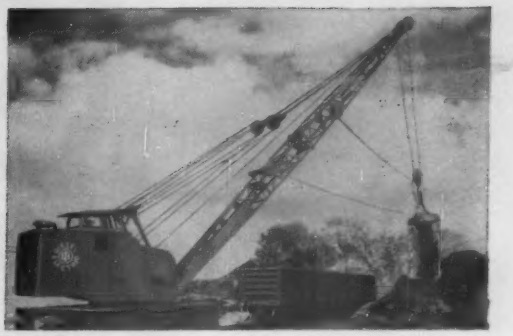
The CONTROL UNIT
Type TH-5-A. Controls and transmits the picture from camera to monitor.



Progress Is Our Most Important Product

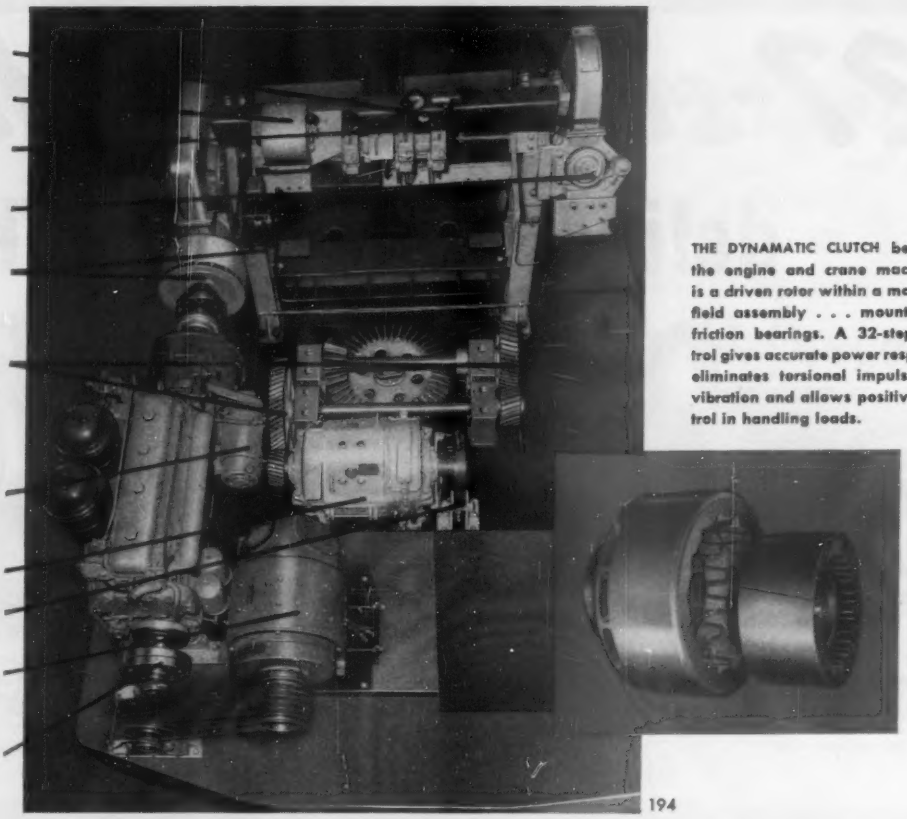
GENERAL ELECTRIC

HOW THE ELECTRIC ROTATING MECHANISM IN I. B. LOCOMOTIVE CRANES increases operating speed and efficiency



Wherever crane rotation is unusually severe (magnet and bucket operations), an electric rotation unit (optional at extra cost) can be supplied with Industrial Brownhoist Cranes. The savings in maintenance and the greater efficiency plus the elimination of friction clutches offset the cost in a short time. The generator in the electric rotating motor is large enough to supply power for magnet service, and the complete rotation mechanism is easily accessible, being mounted on the top of the rotation bed. Reversing the flow of current through the motor, quickly and smoothly reverses the direction of rotation. • The carbody, trucks, monitor-type cab, and machinery arrangement of I. B. equipment have been equally well engineered. Write for Catalog No. 548 for complete information.

- PUSH BUTTON MAGNET CONTROL
- ROTATING CONTROLLER
- SAFE WORM DRIVEN BOOM HOIST
- AUTOMATIC BOOM HOIST BRAKE
- DYNAMIC CLUTCH AND CONTROLLER
- ELECTRIC ROTATION GEAR REDUCTION UNITS MOUNTED ON ANTI-FRICTION BEARINGS (HERE SHOWN WITH OIL CASES REMOVED)
- 1500-WATT BATTERY GENERATOR FOR STARTING AND NIGHT LIGHTING EQUIPMENT
- ROTATING MOTOR
- ROTATING BRAKE
- ROTATING AND MAGNET GENERATOR SUPPLIES CONSTANT VOLTAGE
- FLEXIBLE COUPLING



194

THE DYNAMATIC CLUTCH between the engine and crane machinery is a driven rotor within a magnetic field assembly . . . mounted on friction bearings. A 32-step control gives accurate power response, eliminates torsional impulse and vibration and allows positive control in handling loads.

BROWNHOIST

BROWNHOIST MATERIALS HANDLING EQUIPMENT GIVES A LIFT TO AMERICAN INDUSTRY

SUBSIDIARY OF Penn-Texas

INDUSTRIAL BROWNHOIST CORPORATION
BAY CITY, MICHIGAN • DISTRICT OFFICES: New York, Philadelphia, Cleveland, San Francisco, Chicago; Montreal, Canada
AGENCIES: Detroit, Birmingham, Houston, Los Angeles.

27-second loading.

deliver EXTRA "PAY-DIRT"

Note how extra-high Payscraper apron-lift provides *obstruction-free* room for fast unloading. And straight-line, *power-saving* ejector reeving leaves more power on Payscraper wheels, to speed dumping and spreading.

Left to right: John L. Jersey; J. M. Harris, Supt.; Dale Jersey, Supt.; and William Donaca, General Supt. of the job.

Air-assisted clutch; big, safe, 4-wheel air brakes; exclusive Hydro-Steer — all contribute to give the Payscraper its outstanding operating ease and safety. The two Payscrapers and two other towed scrapers are push-loaded by the TD-24.

. . plus super-fast get-away . .

on industrial district job

for John L. Jersey, Inc., Portland, Oregon

John L. Jersey, Inc., Portland, Oregon, uses International "55" Payscraper loading and transport speed—and famous TD-24 *follow-through* push-loading—to highball the 833,000-cu-yd Rockwood Industrial District contract to timely, profitable completion.

In only 27 stop-watch-certified seconds, and only 60 to 100 feet of travel, each "55" Payscraper's bowl boils heaping full of gravelly soil—and the "55" is off to the fill at up to 20 mph!

"More dirt on the fill"—more dough in the till

Owner John L. Jersey reports: "Last year we put over 2,000 hours on both our '55' Payscrapers with cable replacements as the only necessary repairs. This year we got two more '55's' and a new TD-24 to load them fast. I believe '55's' are the most scraper for the money.

"We've found our '55's' load in 25-30 seconds. They're simple and easy to maintain and operate. Quick, full-load Payscraper get-away means more dirt on the fill, and that's what we get paid for."

Largest of its kind in the Pacific Northwest, the triple-terraced, 188-acre Rockwood project, on the Columbia river, is a Union Pacific Railroad Co. development—to attract new industry to the Portland area.

Prove bonus-powered International equipment performance for reducing grades, removing landslides, daylighting curves, handling ties, loading ballast—for all kinds of off-track duties. See your nearby International Construction Equipment Distributor for a demonstration.

See you at the ROAD SHOW—CHICAGO—Jan. 27 to Feb. 4, 1957

INTERNATIONAL HARVESTER

INTERNATIONAL®
Construction Equipment

International Harvester Company, 180 N. Michigan Avenue, Chicago 1, Illinois

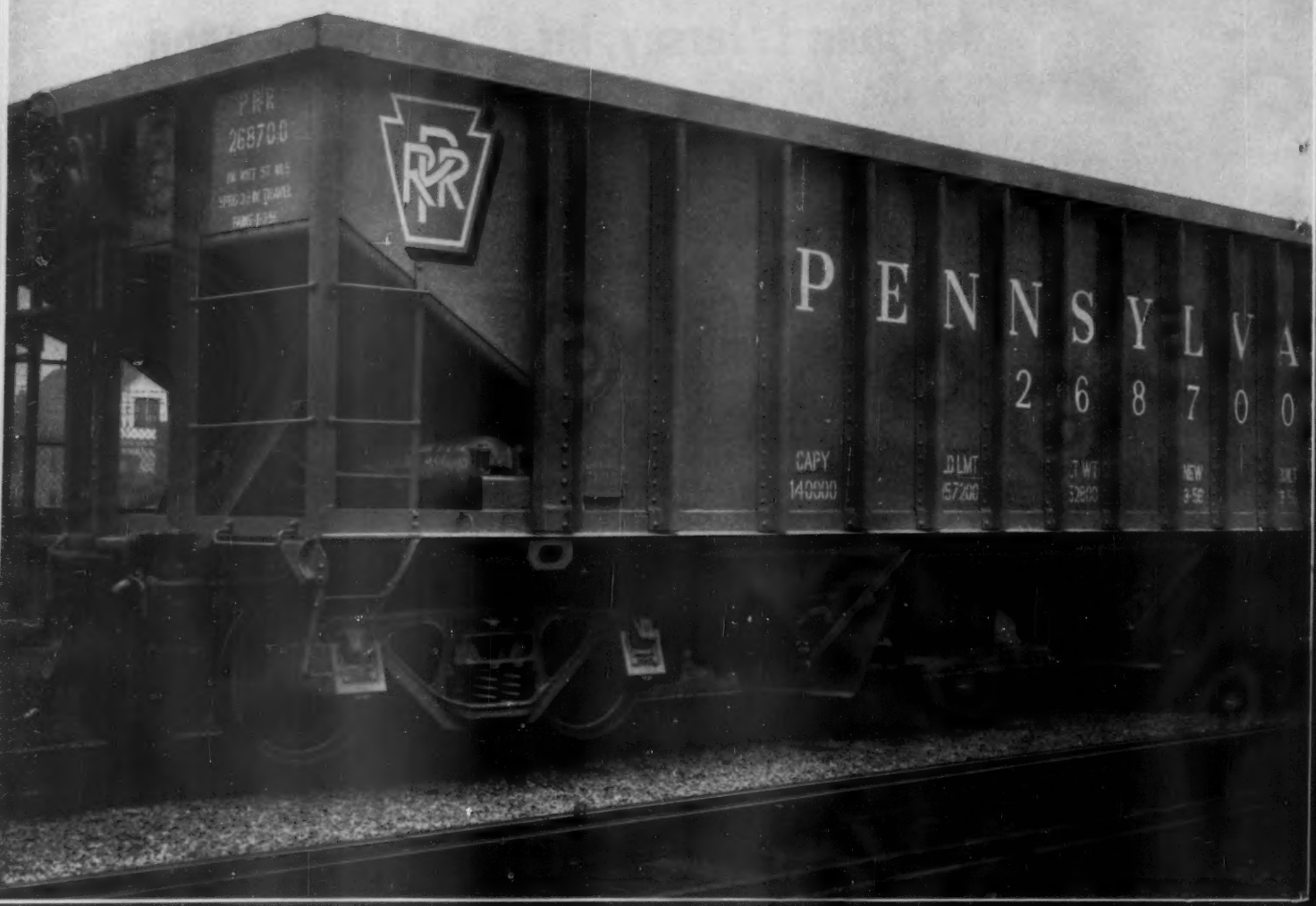
A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Boom Tractors . . . Self-Propelled Scrapers and Bottom-Dumps . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Trucks . . . Diesel and Carbureted Engines . . . Motor Trucks

A Message to Management . . .

225,000 freight cars have been built

Planned for long life and low maintenance

800 70-ton hopper cars like this, built with USS COR-TEN high-strength steel, have been delivered, within the past year, to the Pennsylvania Railroad by American Car & Foundry Division of ACF Industries, Inc. These cars were built to PRR's new design, which not only incorporates the best features of existing hopper car design but goes well beyond this to provide a car that will offer exceptional resistance to the destructive mechanical forces to which hopper cars are subjected today. (The Pennsylvania has in service an additional 300 covered-hopper cars and 2,600 box cars in which USS COR-TEN Steel was used.)



better with USS COR-TEN steel since 1933

The Pennsylvania Railroad has now adopted a policy of using high-strength low-alloy steel for all body sheets in contact with the lading in their hopper car fleet

This important decision is part and parcel of a broadly conceived program "*to establish the Pennsylvania as the pace setter in the revitalization of the railroad industry.*"

By standardizing on the use of high-strength low-alloy steel for its hopper car fleet, the Pennsylvania confidently expects to obtain three important economic benefits:—(1) longer car life, (2) lower maintenance costs and (3) greater equipment availability.

The experience of railroads, operating hopper cars built with USS COR-TEN Steel, has proved that the use of COR-TEN Steel will prolong the life of sheets in contact with the lading by 50% or more—will sharply reduce maintenance costs by making necessary only one heavy repair instead of two during the life of the car—and, in addition, will cut out-of-service time in half.

In these applications, the elimination of one heavy repair results in a saving in maintenance cost alone that amounts to from 3 to 6 times the extra first cost of COR-TEN Steel construction.

To these savings can be added the extra earning power for the equipment, due to the fact that it has to be withdrawn from service only once instead of twice for heavy repairs. How much this amounts to in added revenue varies on different roads, but it runs into important money when you consider that many cars often spend from six months to a year waiting for heavy repairs.

The present users of more than 56,000 hopper cars built with USS COR-TEN Steel are daily capitalizing on these cost-saving advantages. They can best tell you how this tough, strong, corrosion-resisting steel is paying off for them. We'll be glad to give the complete list of users so you can get this information at first hand.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • NATIONAL TUBE DIVISION, PITTSBURGH
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

See "THE UNITED STATES STEEL HOUR"—Televised alternate weeks—
Consult your newspaper for time and station.

1933 UNITED STATES STEEL USS HIGH STRENGTH STEELS 23 YEARS OF PERFORMANCE 195

UNITED STATES STEEL

(Continued from page 13)

ing unless the commission finds that proposed short-hauling routes are needed "to provide adequate, and more efficient and more economic transportation." Also prohibited is establishment of a through route to afford financial assistance to a participating carrier.

Supply Trade

Reorganization of Brake Shoe Divisions

On January 1, 1957, a new Railroad Products Division will unite all divisions of American Brake Shoe Company serving the railroad industry. Included will be the railroad product facilities of the Brake Shoe & Castings Division, National Bearing Division, Ramapo Ajax Division and Southern Wheel Division.

John S. Hutchins, executive vice-president and director of American Brake Shoe Company, will have overall responsibility for the new division. He was formerly president of both Ramapo and National Bearing Division.

Stephen S. Conway, a Brake Shoe vice-president and now president of the Brake Shoe & Castings Division, has been named president of the new Railroad Products Division. Eads Johnson, Jr., now president of Southern Wheel Division, will be vice-president, sales. Roy L. Salter, first vice-president of Southern Wheel Division, will have charge of the production department. Raymond A. Frick, vice-president, Brake Shoe & Castings Division, will become assistant vice-president of production. The engineering department will be headed by Rosser L. Wilson as vice-president. Mr. Wilson has been director of mechanical engineering at the Mahwah research center and vice-president and chief engineer of Brake Shoe & Castings Division.

Within the new Railroad Products Division, four staff product managers will supervise the lines of products offered by each of the present divisions. They are Joseph P. Kleinkort, for the Racor line of trackwork and specialties; John F. Ducey, Jr., brake shoe product line; Daniel C. Poor, wheel products; and Harry E. Connors, bearing products.

Three regional sales areas will be established. Sam R. Watkins has been named head of eastern region sales at New York; Ralph L. Robinson, central region sales at Chicago; and Westley C. Muller, western region sales at San Francisco.

Stephen S. Conway

Eads Johnson, Jr.

Roy L. Salter

Wallace W. Abbey

John S. Hutchins

Rosser L. Wilson

Wallace W. Abbey has been appointed western editor of Railway Age at Chicago, effective December 1. He succeeds Joe W. Kizzia, recently named executive editor (Railway Age, Oct. 15, p. 8).

Thomas H. Desnoyers, former regional news editor of Railway Age, Chicago, has been appointed associate editor of Railway Freight Traffic, one of Simmons-Boardman's monthly magazines. Mr. Desnoyers will continue on the Railway Age staff as an associate editor in the Traffic & Transportation department. His successor as regional news editor is **Neil T. Kinney.**

Mr. Abbey has been assistant to the director of public relations of the Association of Western Railways at Chicago for three years. Before that he was managing editor of Trains magazine, Milwaukee. He is a graduate of the University of Kansas and has worked on the Chanute (Kansas) Daily Tribune.

Mr. Kinney has been a writer and editor for the National Safety Council and Kemper Insurance Company, and a reporter for the City News Bureau of Chicago. He is a graduate of the University of Chicago.

Harold R. Suter has been appointed technical director of J. B. Ford Division of **Wyandotte Chemicals Corporation.** He will coordinate activities of the division's research, technical service, manufacturing and engineering departments. **Maurice G. Kramer** continues as director of research, in charge of research laboratories. **John M. Daugherty** and **Bernard F. Schmitz** have joined Wyandotte's railroad sales staff, with headquarters in Minneapolis and in New England, respectively.

Louis T. Freed, assistant western manager, **General Railway Signal Company,** Chicago, has been named assistant southwestern manager, St. Louis. He has been succeeded by **Howard C. Palmer,** sales engineer, Chicago.

Edgewater Steel Company has moved its Chicago district office to 80 East Jackson blvd.

J. L. Mauthe has been elected board chairman of **Youngstown Sheet & Tube Co. A. S. Glossbrenner,** vice-president of operations, has been elected president, succeeding Mr. Mauthe.

Financial

Missouri Pacific.—*Sells Bus Subsidiary.*—Sale of the Missouri Transportation Company, a wholly owned bus subsidiary for the past 27 years, was announced by the MP late last week. The bus company, third largest independent inter-city bus operation in the United States, was purchased by Trammell Crow, Dallas manufacturer and real estate man. Sale price was not disclosed.

Mr. Crow, the new company president, said all operating agreements with connecting carriers would continue and that he intended to investigate the possibility of enlarging and extending operating arrangements with other carriers to improve service in the nine-state area served by the bus line.

Dividends Declared

ATCHISON, TOPEKA & SANTA FE.—25c, quarterly, payable March 1 to holders of record January 25; 60c, extra, payable January 10 to holders of record December 7; preferred, 25c, semiannual, payable February 1 to holders of record December 28.

CHICAGO GREAT WESTERN.—2½% common stock dividend, payable December 31 to holders of record November 30.

EAST PENNSYLVANIA.—$1.50, semiannual, payable January 15 to holders of record December 31.

ERIE.—37½c, quarterly, payable December 15 to holders of record December 7.

KANSAS, OKLAHOMA & GULF.—6% preferred A, $3, semiannual; 6% non-cumulative preferred B, $3, semiannual; 6% non-cumulative preferred C, $3, semiannual; all paid December 1 to holders of record November 17.

MASSAWIPPI VALLEY.—$3, semiannual, payable February 1 to holders of record December 1.

MINNEAPOLIS & ST. LOUIS.—35c, quarterly, payable December 10 to holders of record November 30.

NEW YORK, CHICAGO & ST. LOUIS.—50c, quarterly, increased, payable January 2 to holders of record November 30.

PHILADELPHIA & TRENTON.—$2.50, quarterly, payable January 10 to holders of record December 31.

PITTSBURGH, FORT WAYNE & CHICAGO.—common, $1.75, quarterly, payable January 2 to holders of record December 10; 7% preferred, $1.75, quarterly, payable January 8 to holders of record December 10.

TENNESSEE, ALABAMA & GEORGIA.—50c, payable December 24 to holders of record December 4.

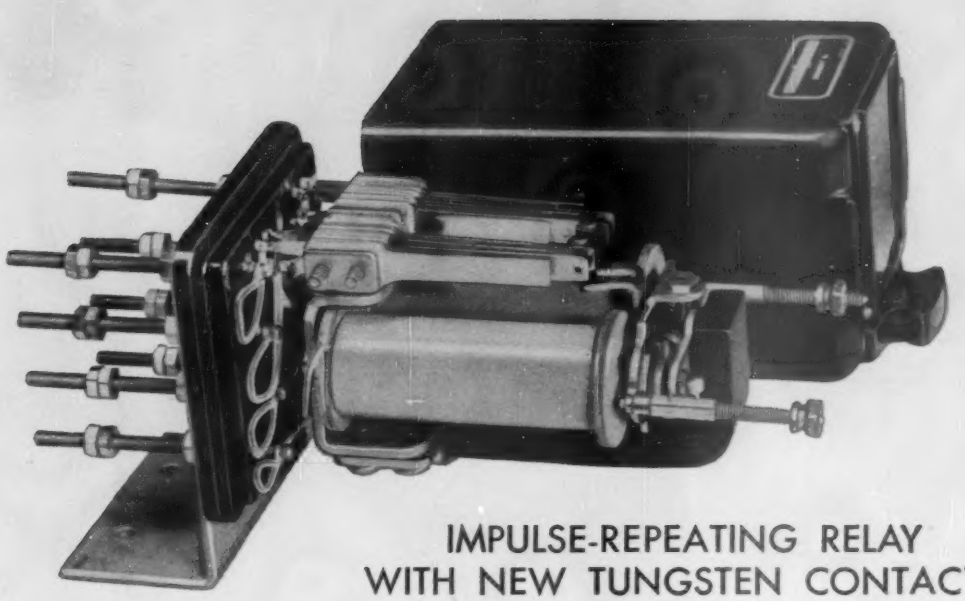
WABASH.—$3.50, payable December 21 to holders of record December 14.

Applications

BALTIMORE & OHIO.—To assume liability for $1,380,000 of equipment trust certificates to finance in part the acquisition of 200 70-ton covered hopper cars from Pullman-Standard Car Manufacturing Company at an estimated unit cost of $8,655. Estimated total cost is $1,731,000. The certificates would mature in 15 annual installments of $92,000 each, beginning January 1, 1958. They would be sold by competitive bids which would fix the interest rate.

ILLINOIS CENTRAL.—To assume liability for $9,300,000 of equipment trust certificates to finance in part the acquisition of 70 1,750-hp diesel-electric road switching locomotive units from Electro-Motive Division, General Motors Corporation. Estimated total cost of the locomotives is $12,660,500—50 would be acquired at an estimated unit cost of $176,044, and 20 at $192,915. The certificates would mature in 30 semiannual installments of $310,000 each, beginning July 1, 1957. They would be sold by competitive bids which would fix the interest rate.

AAR APPROVED!



IMPULSE-REPEATING RELAY
WITH NEW TUNGSTEN CONTACTS

It's here . . . an Impulse Repeating Relay that has the "beefed up" ruggedness required by railroads to handle high voltage-low current switching for selector signaling. (In railway service these relays are sometimes required to switch a one-ampere load at approximately 400 volts d-c.) At the request of the New York Central Railroad, Automatic Electric went to work on the problem of contact failures in this service.

We tried this! We equipped our standard BR-1 and BR-2 Impulse Repeating Relays with ⅛ inch tungsten contacts. We felt that tungsten contacts would prove much more satisfactory for high voltage-low current switching than did the Code 1-14 contacts previously supplied.

That was it! After extensive trial and evaluation, it was the unanimous decision of the A.A.R., in their May meeting in Ohio, to adopt the heavy duty tungsten contacts for all conditions.

Now available! BR-1 and BR-2 Impulse Repeating Relays in either tungsten contacts or standard Code 1-14 contacts. Spring assemblies (complete with angle mounting bracket) are available for field conversion.

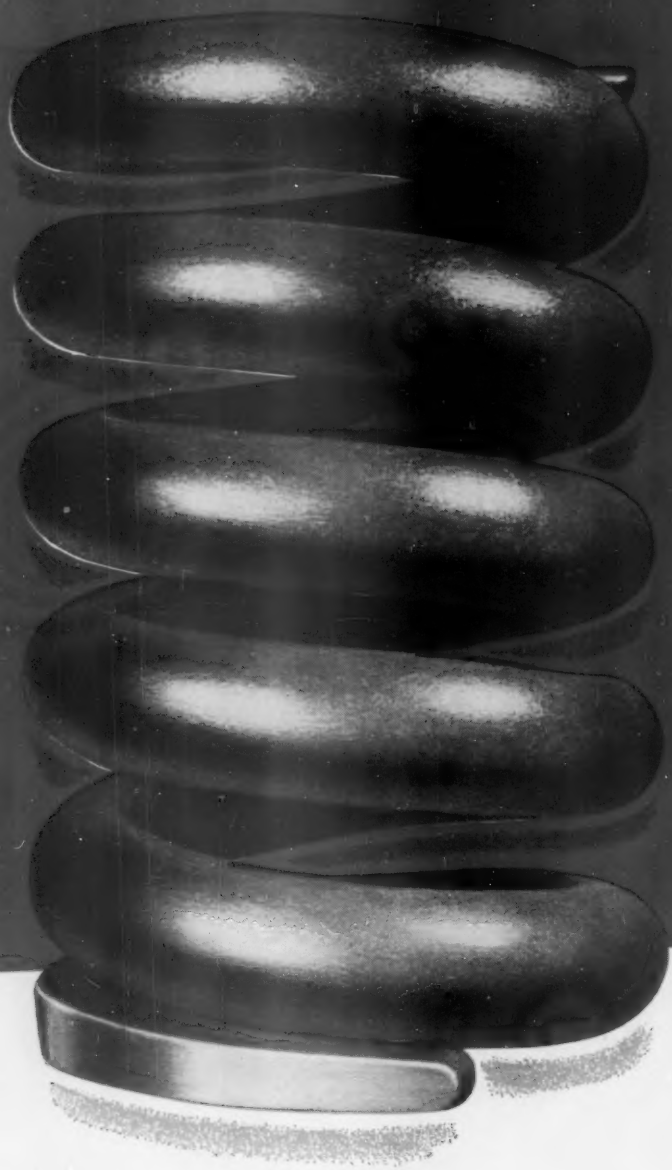
For more information call or write Automatic Electric Sales Corporation (HAymarket 1-4300), 1033 West Van Buren Street, Chicago 7, Illinois. *In Canada:* Automatic Electric Sales (Canada) Ltd., Toronto. *Offices in principal cities.*

AUTOMATIC ELECTRIC

Originators of the dial telephone • Pioneers in automatic control

GENERAL TELEPHONE SYSTEM

LOOK AT



1.

Longer Service Life

All ASF Extended Life Springs are shot-peened—which cold-works surfaces and more than doubles the life of the spring.

ASF

ALL THREE

...before you specify truck springs!

2. Better Performance

A new heat treating process makes ASF Extended Life Springs far better able to maintain load-carrying capacity—without permanent set.

3. Lower Cost

ASF Extended Life Springs are now available at no increase in cost over conventional springs. Because they last over twice as long, they cut your spring costs per car mile.

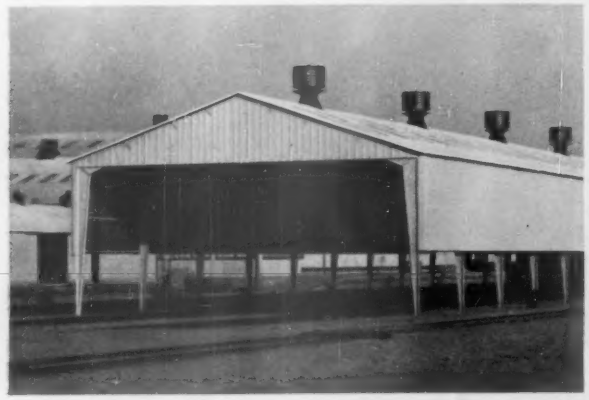
E-X-T-E-N-D-E-D L-I-F-E SPRINGS

A contribution to railroad progress...through research by

AMERICAN STEEL FOUNDRIES

Prudential Plaza, Chicago 1, Illinois

Canadian Sales: International Equipment Co., Ltd., Montreal 1, Quebec



One building or a yardful...

Butler metal buildings are ideal for railroads

Railroads use Butler metal buildings for warehouses, terminals, train sheds, repair shops—in brief, wherever they need a quality building at modest cost.

Butler metal buildings are as modern as today's streamlined trains. Their all-bolted construction permits fast economical expansion. Their post-free interiors provide usable space from wall to wall, from floor to ceiling.

They are weathersealed, wind-safe, and fire-safe. And are available in so wide a range of sizes that you can order the exact size you need right out of stock. Yet for all these advantages, they cost less to buy, less to erect, and less to maintain.

Get the full story. Phone your Butler Builder listed under "Buildings" in the yellow pages of your telephone directory.

For a colorful brochure illustrating applications of Butler buildings for railroad use write direct to Butler.

BUTLER STEEL PRODUCTS

BUTLER MANUFACTURING COMPANY

7371 East 13th Street, Kansas City 26, Missouri

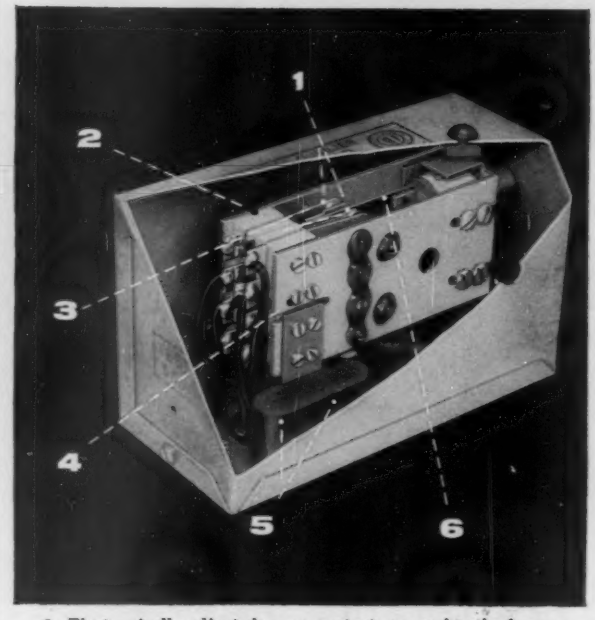
Manufacturers of Steel Buildings • Oil Equipment • Farm Equipment
Dry Cleaners Equipment • Outdoor Advertising Equipment • Special Products

Sales offices in Los Angeles, Richmond, Calif. • Houston, Tex. • Birmingham, Ala. Minneapolis, Minn. • Chicago, Ill. • Detroit, Mich. • New York City and Syracuse, N.Y. Washington, D.C. • Burlington, Ont., Can.

CORNELL-DUBILIER

gives longer life to railroad inverters with this new, improved

MARK IV VIBRATOR



1. Electronically adjusted power contacts secured to the frame rather than to reed stops. Insures permanence under most rugged operating conditions of railroad service.
2. Precision ground ceramic blocks simplify stack. Allow closer tolerances on reed assembly.
3. Wider contact spacing without loss of time efficiency. Reduces tendency to arc at higher voltages prevalent in winter operations. Results in longer vibrator life.
4. Split frame equalizes pressure on stack. Accuracy of components as assembled and adjusted at factory maintained under extreme operating conditions.
5. Live rubber mounts—cushion the vibrator to maintain a smooth flow of power regardless of the extreme shock and vibration encountered in railroad operations.
6. Swedish steel reeds insure long life expectancy with negligible change in operating characteristics.

Write for Engineering Bulletin EB-3004 on C-D's new railroad vibrators to Cornell-Dubilier Electric Corporation, Indianapolis Division, 2900 Columbia Avenue, Indianapolis, Indiana. Affiliated Member A.A.R.

CONSISTENTLY DEPENDABLE

CORNELL-DUBILIER

VIBRATOR INVERTERS

For Industrial—Marine—Railroad and Appliance Services

PLANTS IN SOUTH PLAINFIELD, N. J.; NEW BEDFORD, WORCESTER AND CAMBRIDGE, MASS.; HOPE VALLEY AND PROVIDENCE, R. I.; INDIANAPOLIS, IND.; SANFORD, FUQUAY SPRINGS AND VARINA, N. C.; VENICE, CALIFORNIA; SUBS.: RADIART CORP., CLEVELAND, O.; CORNELL-DUBILIER ELECTRIC INTERNATIONAL CORPORATION, N. Y.

YOLOY E PLATES

give new life to N&W hopper cars

THE YOLOY FAMILY

High in resistance to corrosion, shock and vibration, easy to fabricate, easy to weld.

YOLOY S
(Nickel-Copper)
High Strength Steel

YOLOY E
(Nickel-Chrome-Copper)
High Strength Low Alloy Steel

"Yoloy "E" Plates are used in Norfolk and Western shops for open-top coal car construction. This extra tough, high-strength, low-alloy steel gives added years of useful life to hopper cars."

Because of its superior strength and high resistance to corrosion, abrasion and shock, Yoloy E lasts longer. This means lower maintenance and longer car life, thus contributing to reduced ton-mile cost of rolling stock.

Yoloy E has good weldability and forming characteristics which make it ideal for railroad use. Many years of actual service on American railroads continually prove the extra values in the Yoloy Family of Steels.

Youngstown

QUALITY YOUNGSTOWN SERVICE

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices Youngstown, Ohio District Sales Offices in Principal Cities

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - BLACK PLATE - RAILROAD TRACK SPIKES - MINE ROOF BOLTS

People in the News

CURRENT HAPPENINGS AMONG

Railway Officers

ASSOCIATION OF AMERICAN RAILROADS.—**A. L. Flassig, Jr.**, test assistant, Electrical Engineering Research division, appointed loading rules supervisor, Freight Loading and Container Bureau, Chicago.

BALTIMORE & OHIO.—**Jervis Langdon, Jr.**, appointed general counsel at Baltimore, as reported in Railway Age, Nov. 12, p. 16.

BURLINGTON.—**B. C. Milliken**, commercial agent, Oklahoma City, Okla., appointed general agent there.

CHESAPEAKE & OHIO.—**F. L. Doherty**, commercial agent, Louisville, Ky., appointed general agent, Knoxville, Tenn., succeeding **L. C. Weis**, transferred to Cincinnati to replace **R. H. Burgin**, transferred to Cleveland.

Raymond Sines, assistant supervisor communication maintenance, Huntington, W. Va., appointed supervisor communications maintenance there, succeeding **Nathan Johnson**, retired.

Jervis Langdon, Jr.
B&O

H. W. Habermeyer
RRB

CHICAGO & EASTERN ILLINOIS.—**T. N. Richmond** appointed general agent, San Francisco, succeeding **C. V. Ahlgren**, resigned.

COTTON BELT.—**J. L. Humphreys**, division superintendent, Pine Bluff, Ark., appointed superintendent of transportation, Tyler, Tex., succeeding **C. B. Petticrew**, who retired November 30. **J. R. Holden**, assistant division superintendent, Pine Bluff, named to replace Mr. Humphreys.

ILLINOIS CENTRAL.—**Forrest F. Lipe**, general agent, Memphis, Tenn., named general freight agent there, to succeed **James E. Gardner**, promoted to coal traffic manager, Chicago. **Albert T. Evans**, commercial agent, Memphis, promoted to general agent there, succeeding Mr. Lipe.

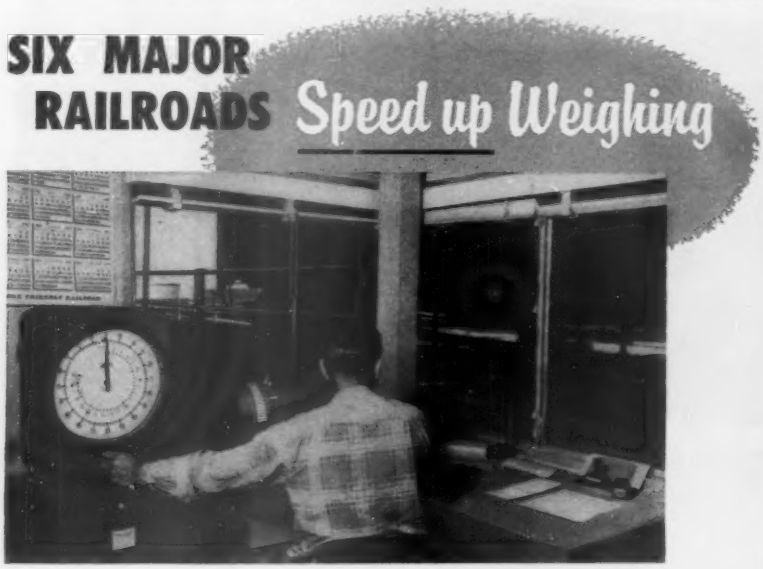
NEW HAVEN.—Several promotions in this road's operating department have been announced by **Roscoe P. Noyes**, recently appointed general manager to succeed **S. J. Massey, Jr.** (Railway Age, Nov. 26, p. 41): **F. J. Orner**, assistant to general manager, New Haven, appointed general superintendent of transportation, with jurisdiction over the transportation, car service, station service and freight loss and damage prevention departments. **S. P. McDonough** named superintendent, Boston division, and will continue also his present duties of terminal manager, Boston Terminal Company and vice-president, Union Freight Railroad, Boston. **R. J. Duggan**, superintendent at Boston, appointed superintendent, New Haven division, with jurisdiction over Cedar Mill, Grand Central and Harlem River terminals, and New York Connecting RR. **W. Scheibler**, superintendent, New Haven, appointed general superintendent there. **F. E. Moran**, passenger asstant, New Haven, named superintendent passenger transportation, and **B. J. Lawlor**, freight assistant there, appointed superintendent freight transportation.

PENNSYLVANIA.—The following three departments have moved from 8 Broadway, New York, to 26 Broadway: Foreign traffic sales, under **George Shimrak**, manager; grain traffic sales, under **A. F. Birnbrauer**, manager; and lighterage, under **O. W. Seltman**, agent.

RAILROAD RETIREMENT BOARD.—**Howard W. Habermeyer**, director of wage and service records, named by President Eisenhower as chairman, RRB, Chicago.

OBITUARY

George F. Squires, 62, vice-president and general manager of **Pacific Electric**, Los Angeles, died November 18 at Huntington Memorial Hospital after a heart attack.



...with Cox & Stevens Electronic Track Scales

Eleven Cox and Stevens track scales on six major railroads are weighing cars in motion accurately and quickly . . . reducing costs and easing the car shortage by getting freight rolling sooner. Linked up with automatic tabulating systems, these scales also eliminate errors in paper work and cut down on accounting time. Two other railroads have specified Cox and Stevens scales for installation this year.

Cox and Stevens track scales are well past the experimental stage. Since the pioneer installation in 1949, they've been tried, tested . . . and reordered. Southern Railway, for example, bought its first Cox and Stevens scale for Birmingham in 1952, its second for Chattanooga in 1955, and its third for Atlanta in 1956.

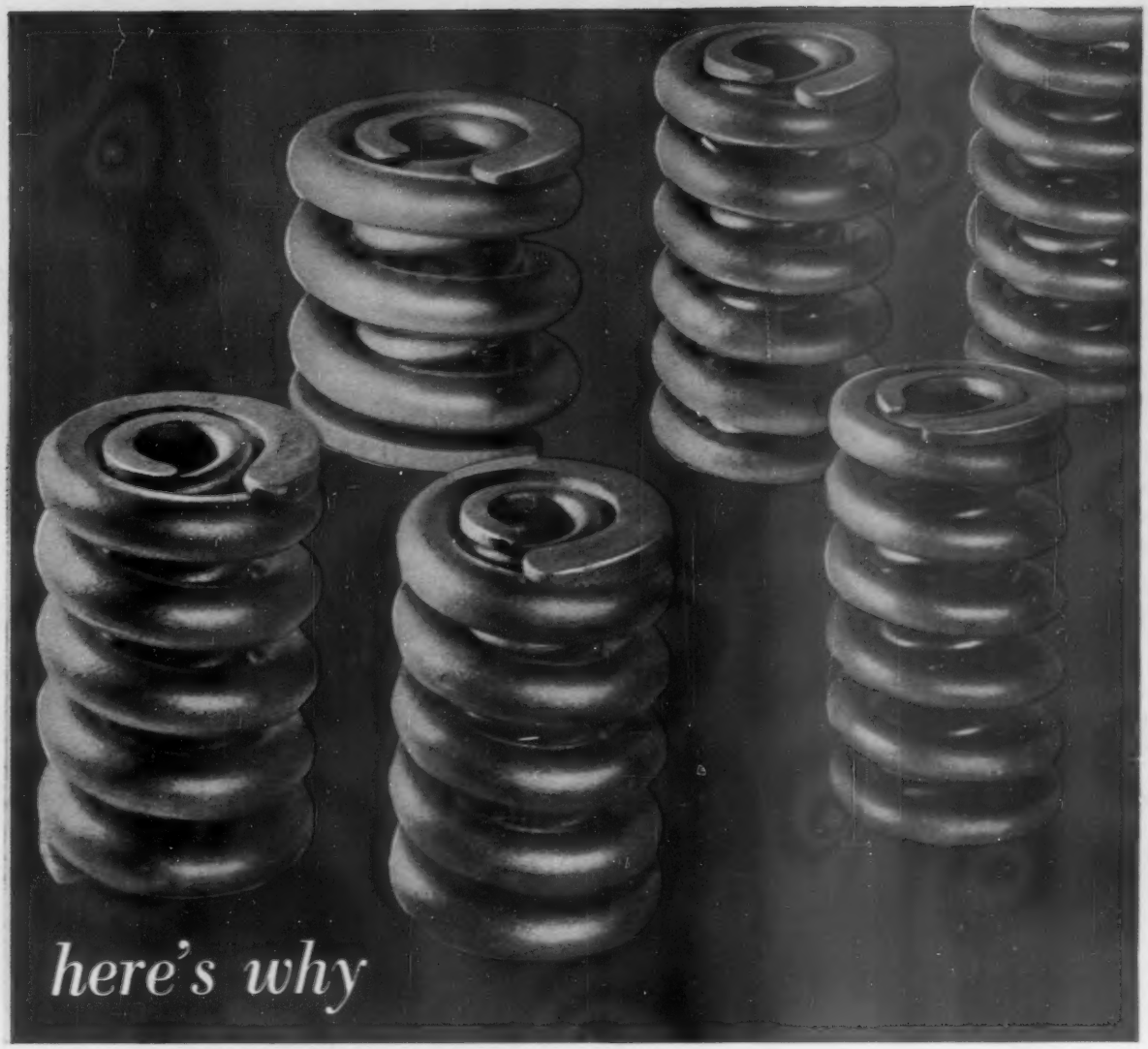
See what Cox and Stevens electronic track scales can do to reduce weighing costs, improve utilization of rolling stock and speed up record keeping. Send for Bulletin No. 3003, "A Test Report on Cox and Stevens Electronic Track Scales."

COX & STEVENS ELECTRONIC SCALES DIV.

Revere CORPORATION OF AMERICA

24

WALLINGFORD, CONNECTICUT A Subsidiary of Neptune Meter Company



CRUCIBLE *fatigue-resistant* springs give longer service

The exceptional service life of Crucible *fatigue-resistant* springs is *built-in* during manufacture. *They're designed to outlast conventional springs many times over.* Here's why...

SHOT PEENING—Crucible *fatigue-resistant* springs are given a controlled shot peening on the most modern equipment. It means a better surface condition—and imposes a negative stress on the surface to offset positive stresses set up in service. It adds up to optimum performance, whether you specify single or double heat treated springs.

QUALITY CONTROL FROM ORE TO FINISHED SPRING—As a fully integrated special steel producer, Crucible has control over quality from ore to finished spring. Inspections are continuous, and may include a final magnaflux. For full details about *fatigue-resistant* springs, write *Spring Division, Crucible Steel Company of America, McCandless Ave., Pittsburgh 1, Pa.*

CRUCIBLE spring division

Crucible Steel Company of America

move trains
at higher speeds

haul more tonnage

reduce wear on
wheel flanges and rails

reduce
fuel consumption

You get these benefits when you use STANDARD Rail and Flange Lubricants

STANDARD Rail and Flange Lubricants mean smoother, more economical railroading. Tests prove it.

One test which demonstrated the value of rail and flange lubricants was made on a 45.63 mile stretch of track in a Rocky Mountain state. There were 21.36 miles of curved track on the run. Average curvature was 6.13°. Total included angle was 6,924°. Elevation gain was 3,775 ft. Maximum grade was 2%. The same train of 32 cars and locomotive was used for the test runs which were made before and after the track was lubricated.

With track lubrication, the test disclosed, curve resistance was cut in half. About 96 feet of elevation were gained and an increase of 2.6% in tonnage rating was obtained.

Conclusions reached from this test were that, with track lubrication, substantial improvements in operating efficiency are possible. These can be utilized in three ways:

1 Tonnage hauled can be increased
2 Train speed can be increased
3 Fuel consumption can be reduced

Still other tests have proved that curve rail and locomotive flange wheel life can be more than doubled through the use of rail and flange lubricants. And in terminal and yard operations in populated areas where quiet operation is important the noise-reducing effect of rail lubrication can mean better public relations.

Get in on these benefits. Get in touch with Standard Oil. Write or call, Railway Sales Department, Standard Oil Company, 910 S. Michigan Avenue, Chicago 80, Illinois.

STANDARD

STANDARD OIL COMPANY
(Indiana)

Quick Facts About
STANDARD RAIL and FLANGE LUBRICANTS

- Give four to five miles of carry.
- Stay on the track. Won't wash off in wet weather. Won't run off in hot weather or solidify at low temperatures.
- Approved by all equipment manufacturers.

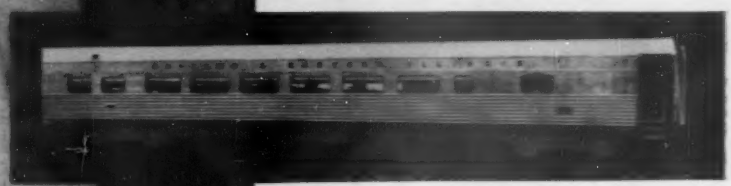
THE NEW LOOK

costs less...

HELIARC spot-welding and fusion welding are helping railroads save up to 88% of new rolling stock cost, by simplifying and speeding many car fabricating jobs . . . Now, using HELIARC welding, railroads can do more car work in their own shops, and realize substantial savings. Here are some important HELIARC welding features.

With HELIARC spot-welding, welds can be made with access to the work from only one side. All welds are clean and sound, and take only seconds to complete. No special skill is required.

HELIARC fusion welding can attain speeds of 100-in. per minute in many operations. This process makes top-quality welds in all types of joints, and in all commercially fabricated metals. It is the most efficient fabricating method for a wide variety of jobs.



Learn how HELIARC welding can speed production and help you save time and money . . . Contact your local LINDE Representative today.

A new stainless steel window frame is HELIARC welded in place . . . Ten additional passenger cars were remodeled at only 12% of new car cost.

RAILROAD DEPARTMENT

Linde Air Products Company

A Division of Union Carbide and Carbon Corporation

30 East 42nd Street UCC New York 17, N. Y.

Offices in Other Principal Cities

In Canada: LINDE AIR PRODUCTS COMPANY
Division of Union Carbide Canada Limited, Toronto

"Linde", "Heliarc", and "Oxweld" are registered trade-marks of Union Carbide.

Supplying to railroads the complete line of welding and cutting materials and modern methods furnished for over forty years under the familiar symbol - - -

CLASSIFIED ADVERTISEMENTS

FOR SALE
railway equipment
Used—As Is—Reconditioned

RAILWAY CARS
All Types

LOCOMOTIVES
Diesel, Steam, Gasoline, Diesel-Electric

special offerings
30 Cupola Type, Steel Underframe Caboose Cars
Cast Steel Trucks
1—Browning No. 3 Diesel Locomotive Crane
Standard Gauge—27½-Ton Capacity
1—Model 15 Burro Crane Standard Gauge
IMMEDIATE DELIVERY!

Service-tested ®
Freight Car Repair Parts
For All Types of Cars

Railway Tank Cars and Storage Tanks
6,000- 8,000- and 10,000-gallon
Cleaned and Tested

IRON & STEEL PRODUCTS, INC.
"ANYTHING containing IRON or STEEL"

General Office: 13486 So. Brainard Ave. Chicago 33, Illinois Phone: Mitchell 6-1212
New York Office: 50-c Church Street New York 7, New York Phone: BEekman 3-9230

KEEP BUYING
U. S.
SAVINGS
BONDS

FOR SALE
RECONDITIONED
RAILROAD CARS FOR INTERPLANT USE
GONDOLAS • BOX • FLAT
ERMAN-HOWELL DIVISION
332 South Michigan Avenue
Chicago 4, Illinois
WEbster 9-0500

FULLY GUARANTEED

FOSTER *QUALITY* **RELAYING RAILS**

Lower installation and maintenance costs—handle more cars better. Foster nationwide warehouses also stock every New Rail Section 12# through 175#, Switch Material and Accessories to meet your specific job requirements.

SEND FOR CATALOGS

RAILS - TRACK EQUIPMENT - PIPE - PILING
L.B. FOSTER CO.
PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 3 • HOUSTON 2 • LOS ANGELES 5

FOR SALE

CRANE, 1944, UNUSED, 75 TON, RAILROAD LOCOMOTIVE STEAM OIL BURNER, 56½" GAUGE, WRECKING CRANE MFG'D BY INDUSTRIAL BROWNHOIST. WRITE OR WIRE

UNITED IRON & METAL CO., INC.
630 S. CATHERINE STREET
BALTIMORE 23, MARYLAND

ADVERTISERS

ACF Industries, Incorporated 50, 51
American Brake Shoe Company, Headquarters Division ..... 17-28 incl.
American Steel & Wire Division, United States Steel Corporation 62, 63
American Steel Foundries 66, 67
Automatic Electric Sales Co. 65

Bethlehem Steel Company 1
Butler Mfg. Company 68

Classified Advertisements 74
Columbia-Geneva Steel Division, United States Steel Corporation 62, 63
Cornell-Dubilier Electric Corporation 68
Crucible Steel Company 71

Erman-Howell Division 74
Exide Industrial Division, Electric Storage Battery Company 32

Foster Co., L. B. 74

General American Transportation Corporation 36
General Electric Company 30, 31, 48, 49
General Electric, Industrial Electronics Division, Broadcast Equipment 58
General Railway Signal Company ..... Back Cover
General Steel Castings 53
Gould National Batteries, Inc. 52

Headquarters Division, American Brake Shoe Company ..... 17-28 incl.

Industrial Brownhoist Corp. 59
International Harvester Company 60, 61
Iron & Steel Products, Inc. 72

Jackson Vibrators, Inc. ..... Inside Back Cover

Linde Air Products Company, Railroad Dept. a Division of Union Carbide & Carbon Corp. 73

National Malleable & Steel Castings Company 33
National Tube Division, United States Steel Corporation 62, 63

Railway Maintenance Corporation 56, 57
Revere Corporation of America 70

Smith, Inc., L. B. 54
Sperry Rail Service Division of Sperry Products, Inc. 55
Standard Oil Company of Indiana 72

Teletype Corporation, Western Electric Company 29
Tennessee Coal & Iron Division, United States Steel Corporation 62, 63
Timken Roller Bearing Company ..... Front Cover

Union Switch & Signal Division of Westinghouse Air Brake Company 14, 15
United Iron & Metal Co., Inc. 74
United States Borax & Chemical Corp., Pacific Coast Borax Company Division 6
United States Steel Corporation, United States Steel Supply Division 62, 63
Unit Truck Corporation ..... Inside Front Cover

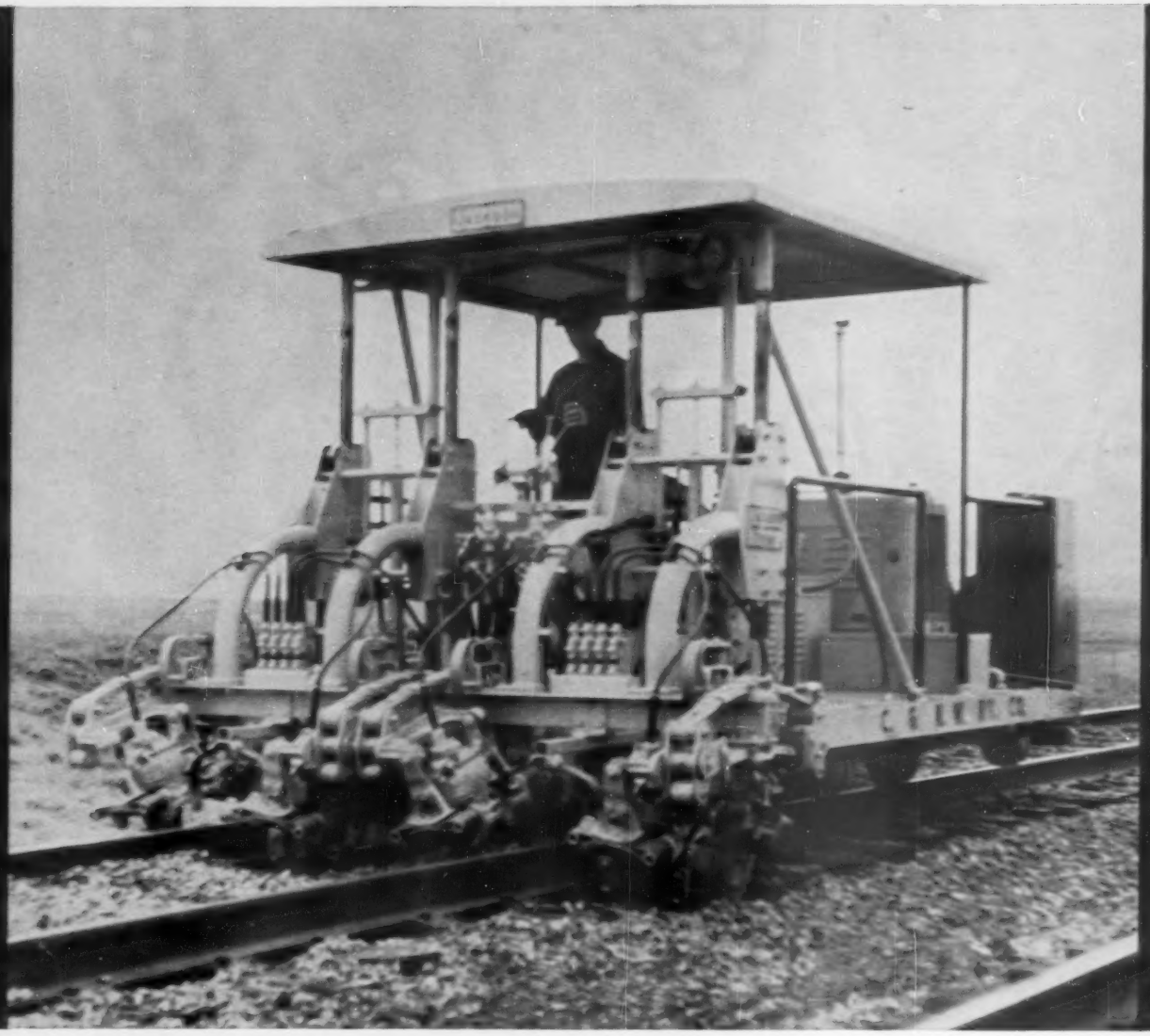
Westinghouse Air Brake Company 4
Whiting Corporation 2
Wine Railway Appliance Company 34

Youngstown Sheet & Tube Company 69

This index is an editorial feature, maintained for the convenience of readers. It is not a part of the advertiser's contract and Railway Age assumes no responsibility for its correctness.

When you recommend

JACKSON TRACK MAINTAINERS...

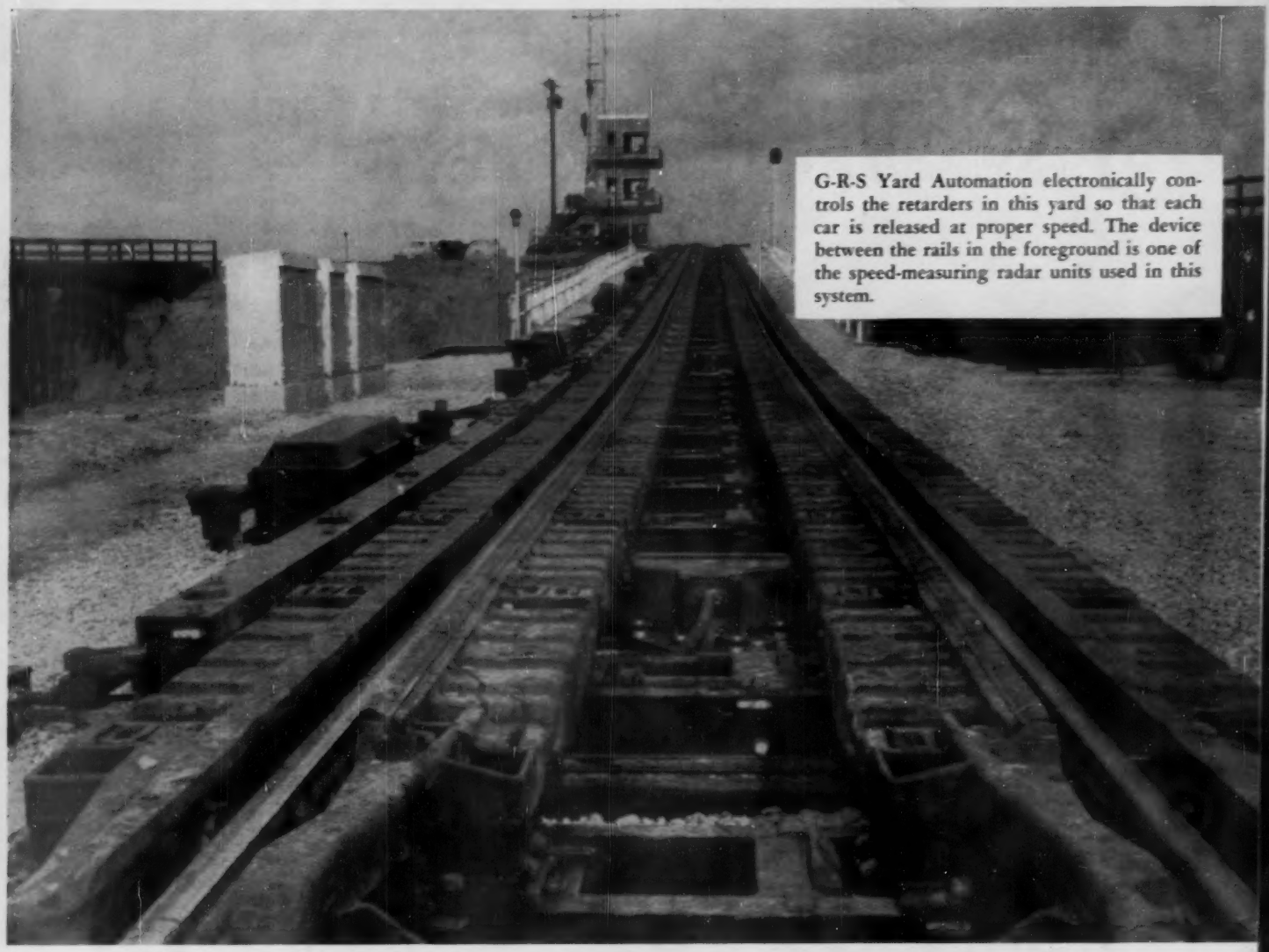


Your good judgment is confirmed by that large majority of railway officials who, during the past year, bought JACKSONS in preference to all other on-track tie-tamping equipment.

Nothing, we believe, could more clearly indicate the very definite superiority of this machine as a medium for both putting up and maintaining track of uniformly finest quality. By all means, let us give you the down-to-earth facts before you make any recommendations or commitments.

Acquirement plans to suit your needs

JACKSON VIBRATORS, INC.
LUDINGTON, MICHIGAN



G-R-S Yard Automation electronically controls the retarders in this yard so that each car is released at proper speed. The device between the rails in the foreground is one of the speed-measuring radar units used in this system.

G-R-S ELECTRIC CAR RETARDERS Installed on Unusually High Hump

In this classification yard it was necessary to locate the hump crest on a high overpass. Six car retarders were required to control cars rolling down the hump.

G-R-S Type E electric car retarders, with G-R-S automatic retarder control, were specified for the job. These retarders use only one form of power, electricity, for both control and operation. Operating energy is used only when retardation position is changed. Actual braking pressure is applied by powerful springs, independent of the position-selection mechanism. Retardation ability is retained even in the event of complete power failure with cars in the retarder.

As in dozens of other yards, these G-R-S retarders are operating on a 24-hour basis controlling thousands of cars every day. Routine maintenance is done between trains over the hump, without delaying yard operations.

G-R-S electric car retarders are a basic element in G-R-S Yard Automation, the fully automatic system of switching and speed control for gravity yards. They are equally at home in manually controlled yards—in car dumper installations—and wherever you wish to control speed or position of freight cars moving under the influence of gravity.

GENERAL RAILWAY SIGNAL COMPANY
ROCHESTER 2, N. Y. CHICAGO 1
NEW YORK 17 ST. LOUIS 1

2915